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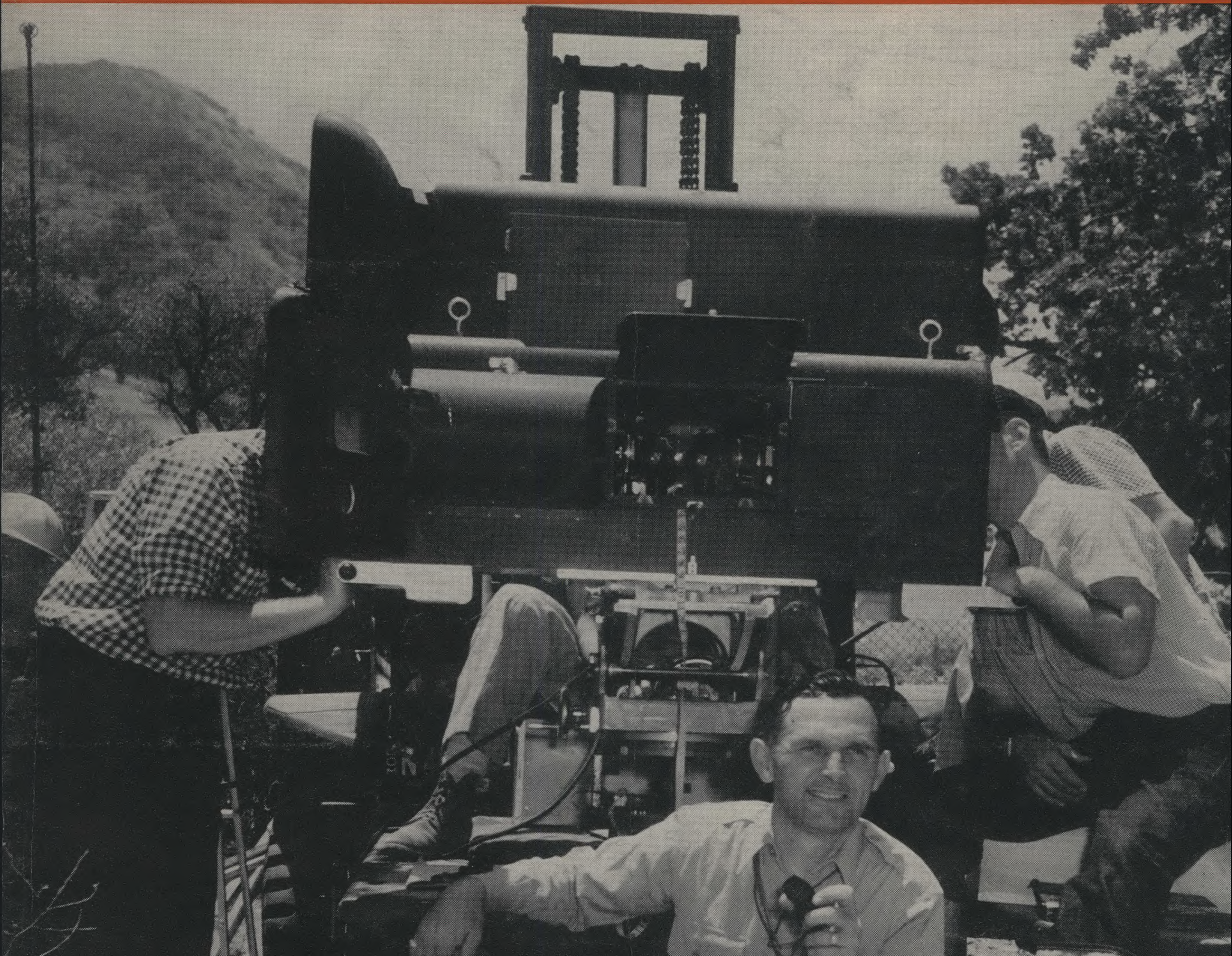


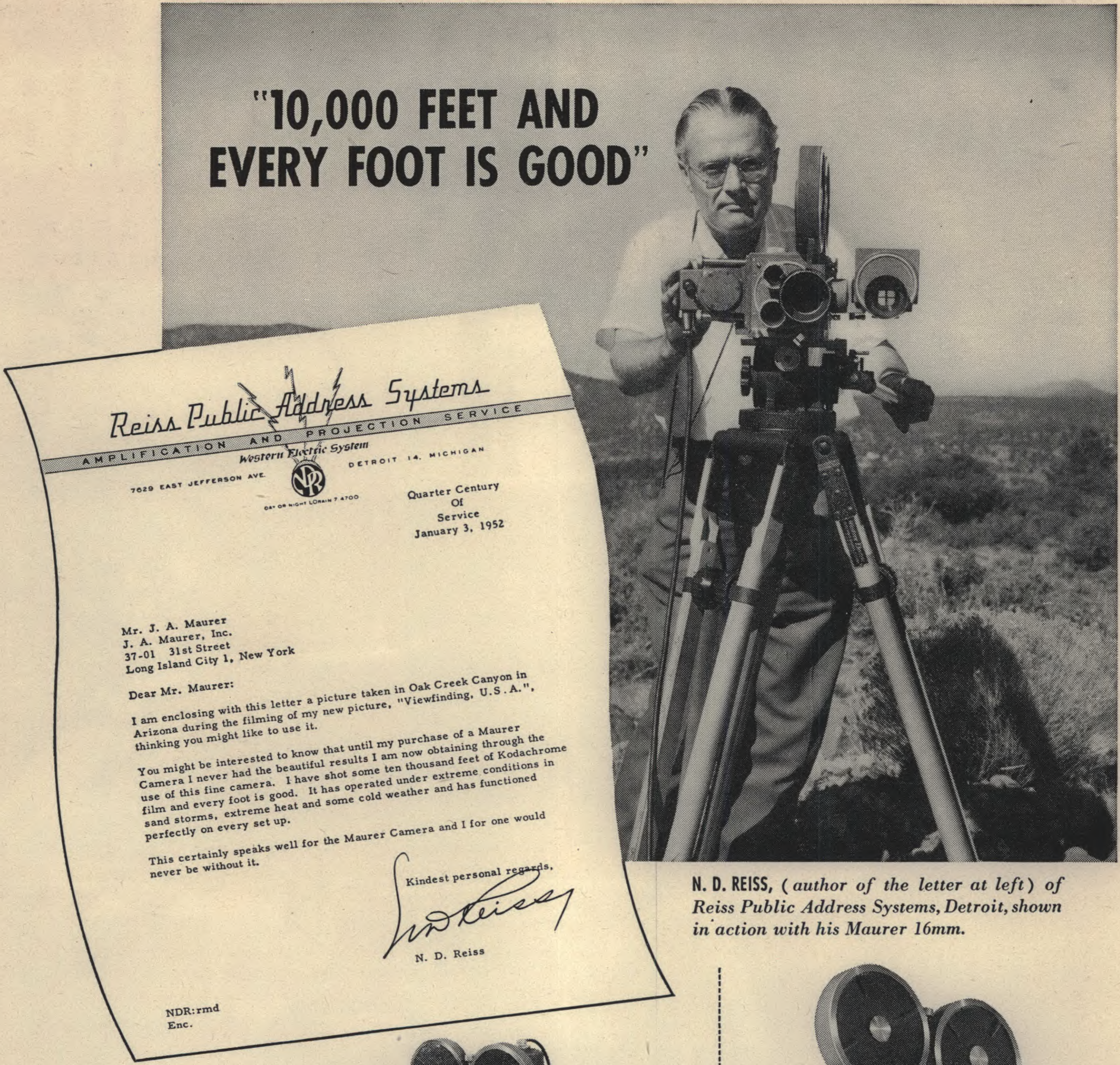
Joseph Biroc, A.S.C., photographs first Hollywood stereofilm in color with Natural Vision 3-D camera.

THIS MONTH

- **Amateurs Who Became Pros**
- **Hollywood Launches 3-D Film Production**
- **The Vistascope--New Tool For Motion Pictures**

AUGUST
1952

"10,000 FEET AND EVERY FOOT IS GOOD"



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N D Reiss

N. D. Reiss

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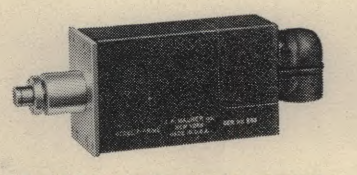
N. D. REISS, *(author of the letter at left) of Reiss Public Address Systems, Detroit, shown in action with his Maurer 16mm.*



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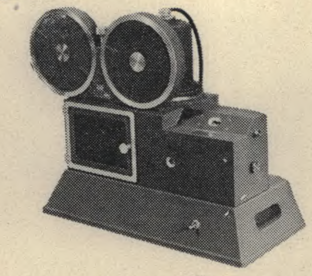

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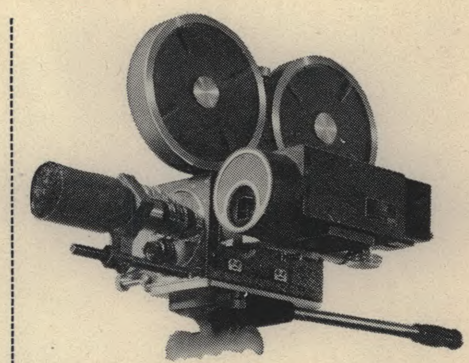

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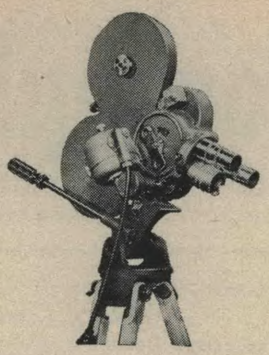

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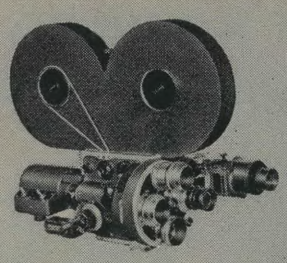

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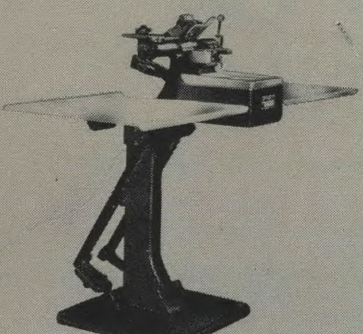

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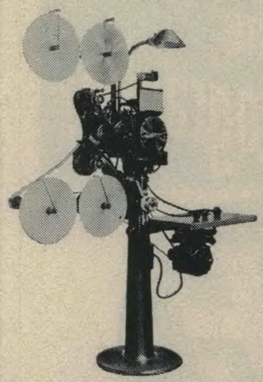

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Editorial and Business Office: 1782 N. Orange Dr., Hollywood 28, Calif.
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ON THE COVER

JOSEPH BIROC, A.S.C., (foreground) prepares to shoot a scene with the Natural Vision 3-D camera for Arch Oboler's "Bwana Devil," initial feature-length stereofilm in color. Biroc's story on the photography of Hollywood's first 3D-production in color appears in this issue, beginning on page 336.

Photo by Louis Hochman, Photography Magazine.

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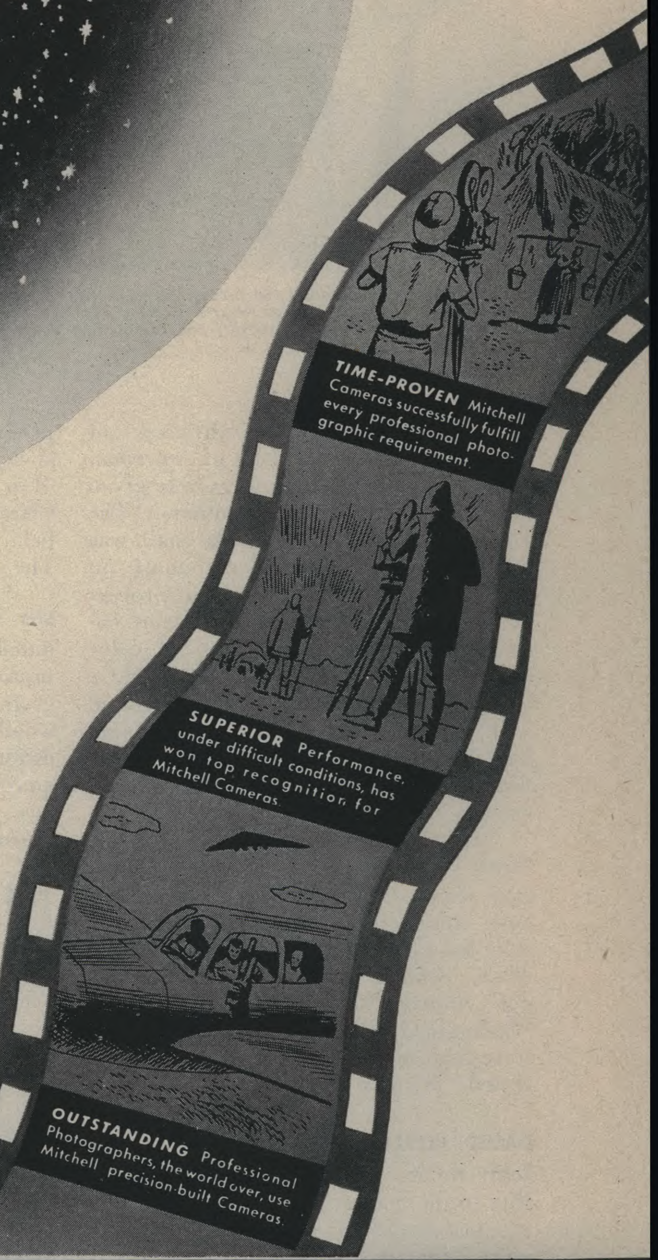

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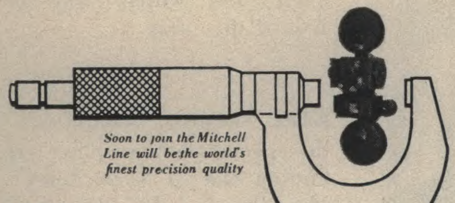

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Hollywood
Bulletin Board

THREE MEN responsible for success of Warner Brothers' "The Miracle of Our Lady of Fatima," latest Warner-Color production, are Fred Gage, WB lab head; John Brahm, director; and cameraman Edwin DuPar, (l to r).

GUESTS of Sid Solow, A.S.C., (left) at July meeting of American Society of Cinematographers, were Hans J. Jost of Berlin, Germany, and Edgar Burlin, of Hollywood. Jost heads German film lab equipment firm.

FIRST PRACTICAL demonstration of Warner-Color for members of American Society of Cinematographers was given July 28th when Warner Brothers' "The Miracle of Our Lady of Fatima" was screened at the A.S.C. clubhouse in Hollywood. On hand to explain process and describe some of the problems encountered in using this latest of color film processes was Fred Gage, A.S.C., head of Warner's laboratory and credited with successful adaptation of Eastman Kodak's color negative and positive films to studio's new color filming system.

"Miracle," by comparison with the studio's initial Warner-Color production, shows tremendous improvement in both color and print quality. Responsible for camerawork was Edwin DuPar, A.S.C., who is currently shooting Warner's fourth Warner-Color production, "Springfield Rifle." Also present at screening was John Brahm, who directed "Miracle."

•

DAVID BOYLE, son of A.S.C. secretary John Boyle, was admitted to membership in the Society last month.

•

KARL STRUSS, A.S.C., and producer-director Cecil B. DeMille, in a get-together at latter's office at Paramount Studio recently, commemorated 33 years continuous service in the motion picture industry. Karl Struss once was DeMille's exclusive cameraman for a period of three years, and photographed such famous DeMille productions as "For Better or For Worse," "Why Change Your Wife?," "Affairs Of Anabel," "Male and Female," and "Sign Of The Cross."

•

SID SOLOW, A.S.C., head of Consolidated Film Industries' Hollywood laboratory, announces an expansion program which will see company's Hollywood plant greatly expanded. New addition under construction will house a quarter of a million dollars worth of new equipment, some of it purchased abroad.

•

KARL STRUSS and Cecil B. DeMille (l to r) celebrate 33 years of movie-making.

FAYTE M. BROWNE, A.S.C., director of photography at Columbia Studios for the past ten years, passed away July 18th, at the age of 56. From 1926 to 1929, he was head of the camera department at Warner Brothers' studio in Burbank. After becoming a director of photography at Columbia, he photographed more than 25 pictures, mostly westerns, for that studio.

•

VISITING A.S.C. headquarters during their stay in Hollywood last month were T. Yokota, cinematographer with Daiei Motion Picture Co., Japan, and M. Midorikawa, technical advisor with same company. Both men were associated in the production of "Roshomon," Japan-made film which won an Academy Award this year.

•

KARL FREUND, A.S.C., who developed the special photographic system used in filming the "I Love Lucy" and "Our Miss Brooks" TV film shows, has been honored with membership in the New York Academy of Sciences, organization representing all important fields of science in America. Freund, who is credited with developing a number of important instruments used in color photography and color film processing, heads Photo Research Corp., Burbank, Calif.

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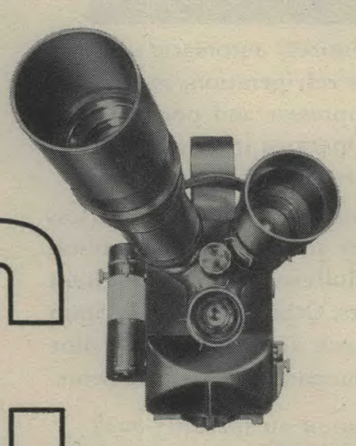

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Cinematography REVIEWS

Of Pictures Previewed in Hollywood Last Month

THE MERRY WIDOW—*Photographed in technicolor by Robert Surtees, A.S.C., for Metro-Goldwyn-Mayer.*

This is MGM's third version of the famous Franz Lehar show, and certainly the most elaborate of them all. Giving Cedric Gibbon's and Paul Groesse's colorful art direction the utmost in faithful reproduction on the screen is Surtees discerning Technicolor camera under his skillful guidance and flair for "painting with light. And this he does in scene after scene to enhance the whole production and make it one of the most lavishly photographed musicals to come out of Hollywood in a long time.

Consisting of more interiors than were in "Quo Vadis" or "The Wild North," Surtees' two previous color assignments, "Widow" displays more of Surtees' versatility in effective lighting and camera movement.

A highlight is his lighting and camera treatment of the sequence where the Count and the Widow meet in the upstairs room at Maxim's, dance and make love. Surtees' skillful lighting and lensing of Miss Turner throughout the entire production makes her lovelier than ever.

YANKEE BUCCANEER—*Photographed in Technicolor by Russell Metty, A.S.C., for Universal-International Pictures.*

To a reviewer who has observed Russell Metty's Technicolor photography over the years, "Yankee Buccaneer" displays this cameraman's remarkable advance in filming and lighting color productions. By contrast with Metty's earlier assignments, "Buccaneer" shows real imagination in lighting, and his skillful handling of the Technicolor camera contributes greatly toward giving this U-I offering top-drawer production values.

In short, here is an example of meticulous and beautiful color photography, enhancing as it does the exaggerated albeit gorgeous costuming and makeup of Suzan Ball, feminine star of the production.

The story, laid in 1820, concerns efforts of U. S. Naval officers to trap pirate ships in the South Atlantic. Going ashore on a small Spanish-held island for provisions, the ship's sailors are forced by a beautiful Countess to take her aboard ship. This brings trouble between two rival officers, but the gal's presence is vindicated when she becomes instrumental in rounding up the villain of the piece.

ONE MINUTE TO ZERO—*Photographed in black-and-white by William E. Snyder, A.S.C., for RKO-Radio Pictures.*

"One Miiute To Zero" is the biggest of the Korean war pictures to date. Vividly photographed, it is filled with exciting battle shots, both land and air, and these often steal the show from the purely dramatic footage filmed on sets on the sound stage. Nevertheless, William Snyder's hallmark of skillful photography is stamped on just about every shot, giving the story the visual impact it demands.

Snyder goes from rugged battle scenes to low key interiors on the sound stage with a subtle hand, and his camera treatment of scenes in which star Ann Blyth appears greatly enhances the personality of this lovely actress.

In the final analysis, credit for the photography of "One Minute To Zero" must be divided three ways — between director of photography Snyder, William Clothier who did many of the aerial shots, aud Linwood Dunn, A.S.C., whose special photographic effects department did so much to enhance the realism of the battle scenes.

A major portion of the picture was filmed on the U. S. Military Reservation at Camp Carson near Colorado Springs, Colorado, with a troupe of 320 Hollywood personnel.

Producer of the picture, which stars Ann Blyth and Robert Mitchum, was Edmund Grainger. Giving it unusually skillful direction was Tay Garnett.

WE'RE NOT MARRIED—*Photographed in black-and-white by Leo Tover, A.S.C., for 20th Century-Fox Pictures.*

If one can stop laughing long enough at this picture, which relates the reactions and tribulations of five different couples when informed they are not legally married after living together almost three years, one can see the fine hand of cinematographer Tover gilding the story with his artful lighting and camera treatment.

The production calls for no unusual cinematic effects, no camera magic; but what Tover produces in the way of top flight photography is a credit to this artist's long record in Hollywood production. It's the kind of lensing job that's beyond criticism of any kind.

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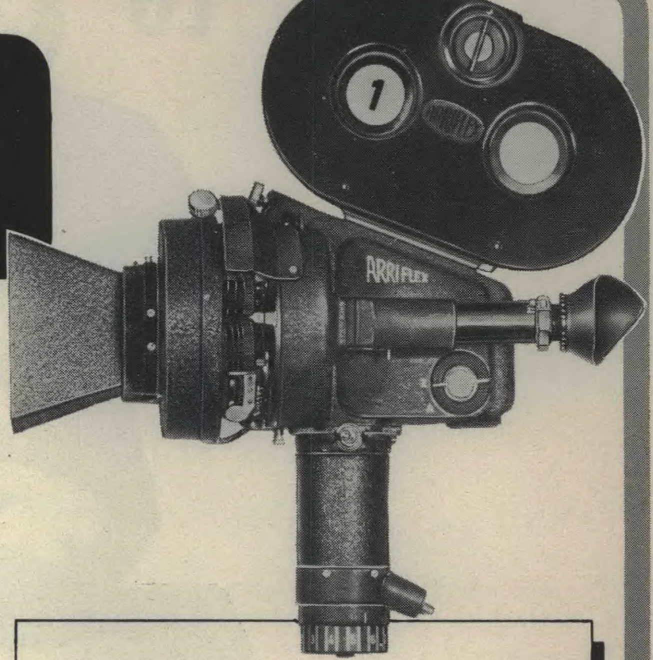

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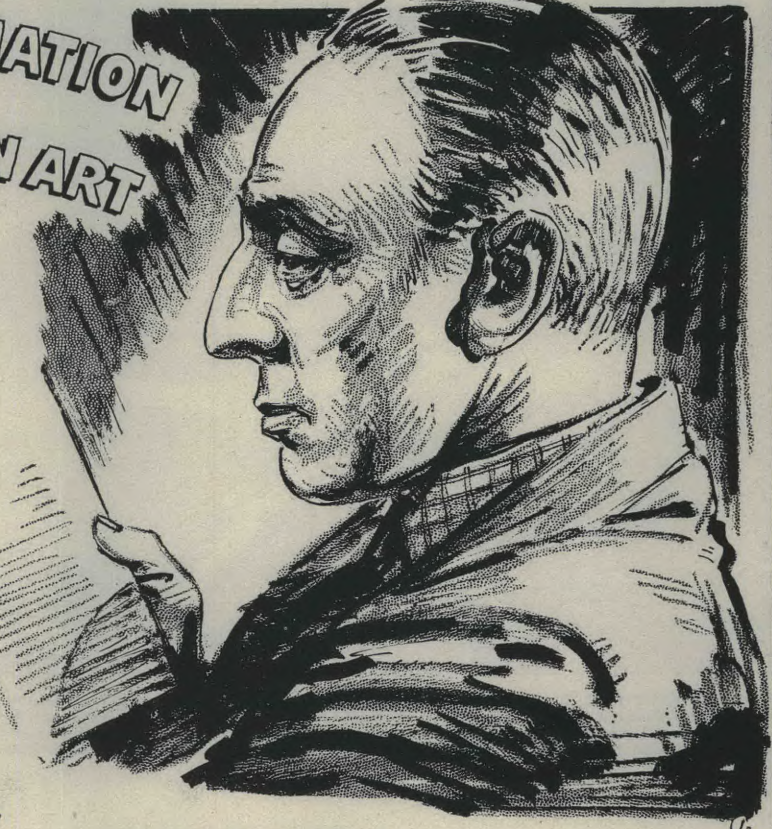

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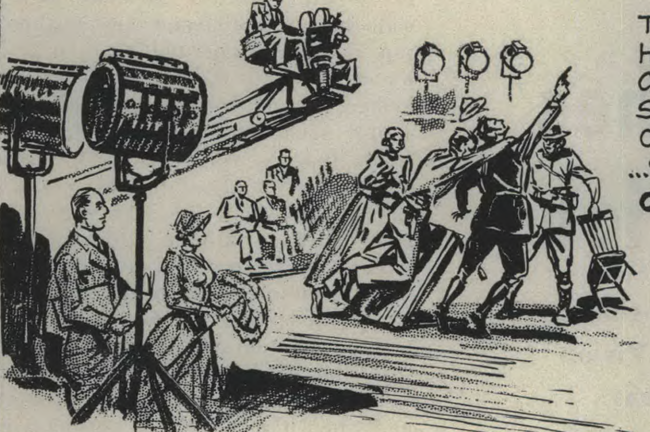

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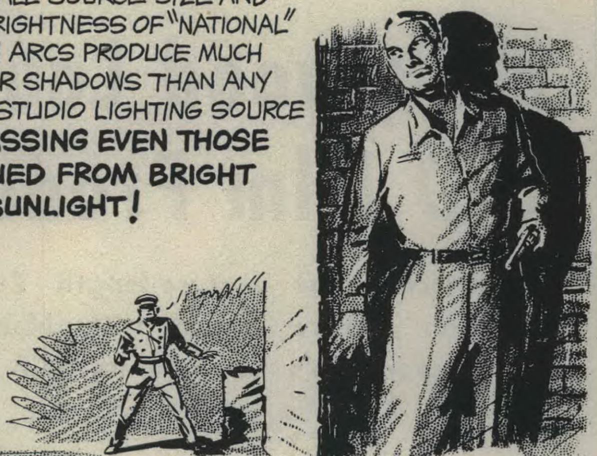

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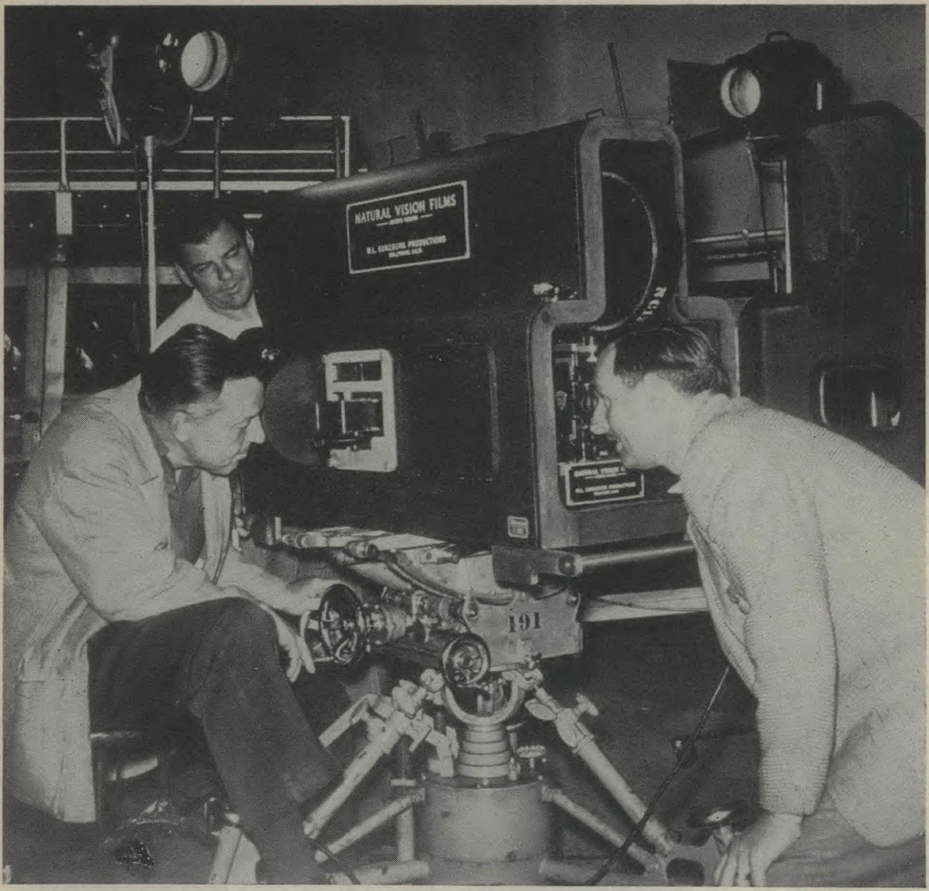


NATURAL VISION'S 3-D camera comprises an arrangement of two 35mm Mitchell cameras which record scene through precision parallax-corrected optics on two separate films, supplying left and right images. Cameraman Joseph Biroc (right) views scene through one of dual cameras while operator Lothrop Worth (left) observes it through central viewfinder. Simultaneous viewing of scene is afforded by second camera, also.

Hollywood Launches 3-D Film Production

Industry's first feature-length 3-dimensional motion picture filmed with Natural Vision Corporation's new stereoscopic cameras.

By JOSEPH BIROC, A.S.C.

THREE-DIMENSIONAL MOVIES have been the subject of increasing study in the United States and Europe for the past 25 years. The U.S. Air Force already is using stereofilms for training purposes, marking, perhaps, the most substantial use of practical 3-D movies anywhere. At the present time, three different stereo systems are being developed in this country, but the top contender, by virtue of its recent successful test in Air Force and feature film production, is that of Natural Vision Corporation of Hollywood.

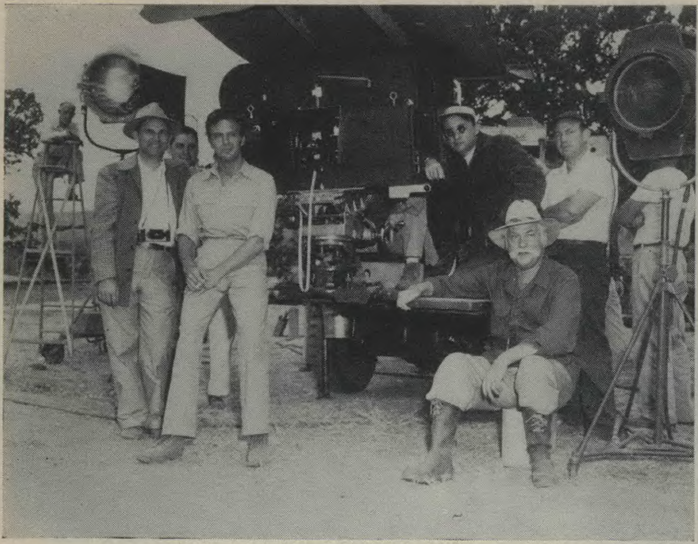
"Bwana Devil," the first feature-length 3-dimensional color film in history went before Natural Vision's 3-D cameras on June 18th. Produced and directed by Arch Oboler, the picture has an African locale and stars Robert Stack, Barbara Britton, and Nigel Bruce.

Natural Vision is said to be the first 3-D system yet developed which is based on the fundamentals of natural vision, hence its name. The 3-D camera is actually two cameras in a single unit photographing separate film strips. These in turn are projected simultaneously with two projectors interlocked to run in unison. While other 3-D systems have employed dual cameras, none have pursued the theory that the 3-D cameras should see and record the scene exactly as the human eyes see it. In other words, twin cameras placed side by side and focusing directly on the scene overlook the important factor of parallax. Natural Vision's system has variable parallax as the crux of its system. The result is 3-dimension pictures on the screen that induce no eye strain. Polaroid spectacles are worn by the audience in viewing the pictures, the same as for other 3-D systems.

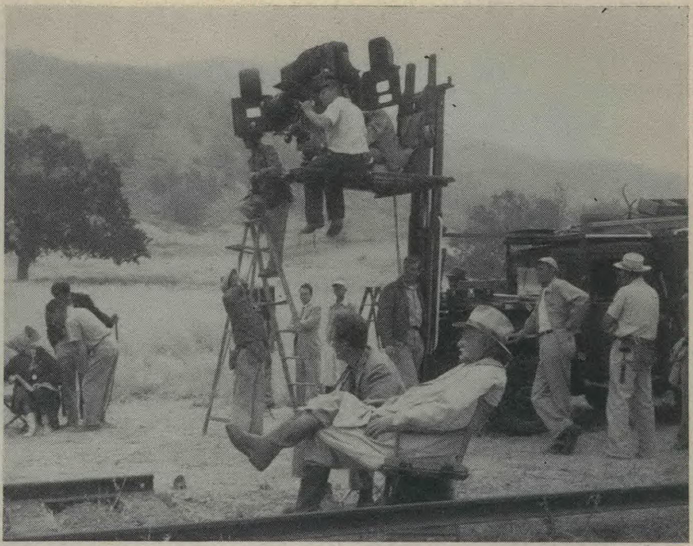
Credit for engineering the Natural Vision camera equipment goes to Friend Baker, a pioneer in the 3-D field for over 23 years, and camera technician O. S. "Bud" Bryhn. Until recently, Baker's developments have been in the field of 16mm 3-D movies. It was a chance meeting between Baker and Milton Gunzburg which led to developing the 35mm 3-D cameras.

Gunzburg had undertaken to produce a documentary film about a youth and a hot rod. When the conventional motion picture camera attempted to record the innards beneath the hood of a hot rod, the pictorial result was disappointing. Someone suggested it would be better if filmed in 3-dimension. Gunzburg looked around for someone who could supply such equipment, and his search led to Baker's workshop at Motion Picture Center studios in Hollywood. To shorten the story, the 3-D camera used by Oboler in filming "Bwana Devil" took shape in record time. Into the picture, meantime, came also camera operator Lothrop Worth who, together with myself, photographed the initial tests with the equipment. The camera was tested periodically for about six months, and when it was declared perfect, Gunzburg looked around for a producer to make a picture.

The tests which I photographed were screened before members of the American Society of Cinematographers at their clubhouse early this year. Other screenings followed; then one day Arch Oboler heard about them. He was in the midst of preparing a new production—a rugged tale about pushing a railroad through an African jungle. Always one to explore the merits of any new cinematic innovation, Oboler looked at the Natural Vision tests and decided to



FRONT VIEW of Natural Vision's 3-D camera on location for Arch Oboler's "Bwana Devil." Cameraman Biroc is at far left. Director Oboler (with dark glasses) sits next to camera.



CAMERA was mounted on "Blue Goose," industry's favorite mobile unit, for entire production. Here camera is raised high on hydraulic lift to record scene for "Bwana Devil."

shoot "Bwana Devil" in 3-dimension, using Ansco Color. Because of my experience with the camera in making the extensive tests, I was engaged as director of photography on the picture. Worth and Bryhn, operator and 3-D technician respectively, and Howard Schwartz and Gene Hirsch as assistants made up our camera crew.

The Natural Vision camera is an interesting piece of equipment. The accompanying photos show the camera in its blimp, and the unique technical details are therefore not visible. Inside the blimp are two standard Mitchell 35mm cameras mounted on a base plate with the lens turrets facing each other. In between are two front-surface mirrors having micrometer adjustments, which reflect the scene into the camera lenses. Controls at either side of the camera base lead to the swivel-mounts holding the mirrors, and enable making the fine micrometer adjustments for the highly important parallax correction prior to shooting each scene. Thus, the two cameras record the scene in left and right images, properly related with respect for parallax.

In addition to moving the mirrors, there is provision for changing the viewing angle of one of the cameras. Mounted on a rotating base, this camera may be pointed at a slight angle in conjunction with the mirror adjustments to achieve the correct parallax.

The usual complement of 4 lenses is missing from the cameras' turrets. Only one lens is mounted on each camera, and this is changed as the need demands The various pairs (paired for equivalent focal length) of lenses used are carefully matched and tested.

Despite the apparent bulk of the camera and the need for critical adjustment of the optical equipment prior to recording each take, it is possible to attain remarkable speed in making new setups. This is due mainly to the facilities provided by the two cameras and viewfinder which permit the cameraman, operator and the director to scan a scene during a single rehearsal, all at the same time. This eliminates the need for separate "run-throughs" for each man, as when shooting with a two dimension motion picture camera.

Selecting camera setups calls for the careful placing of people and dressing of sets, together with the careful selection of lenses of correct focal length to avoid false perspective and distortion. To keep things rolling on the "Bwana Devil" production, most of these decisions were made by Lothrop Worth and myself. Only when we encountered very

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FRONT VIEW of Natural Vision 3-D camera on sound stage. Surrounding camera are some of the men involved in its development: Seated (l to r) are Dr. Julian Gunzburg, eye specialist and technical director; Friend Baker, designer and engineer; and Milton Gunzburg, president of Natural Vision Corp. Operator Lothrop Worth stands next to camera.

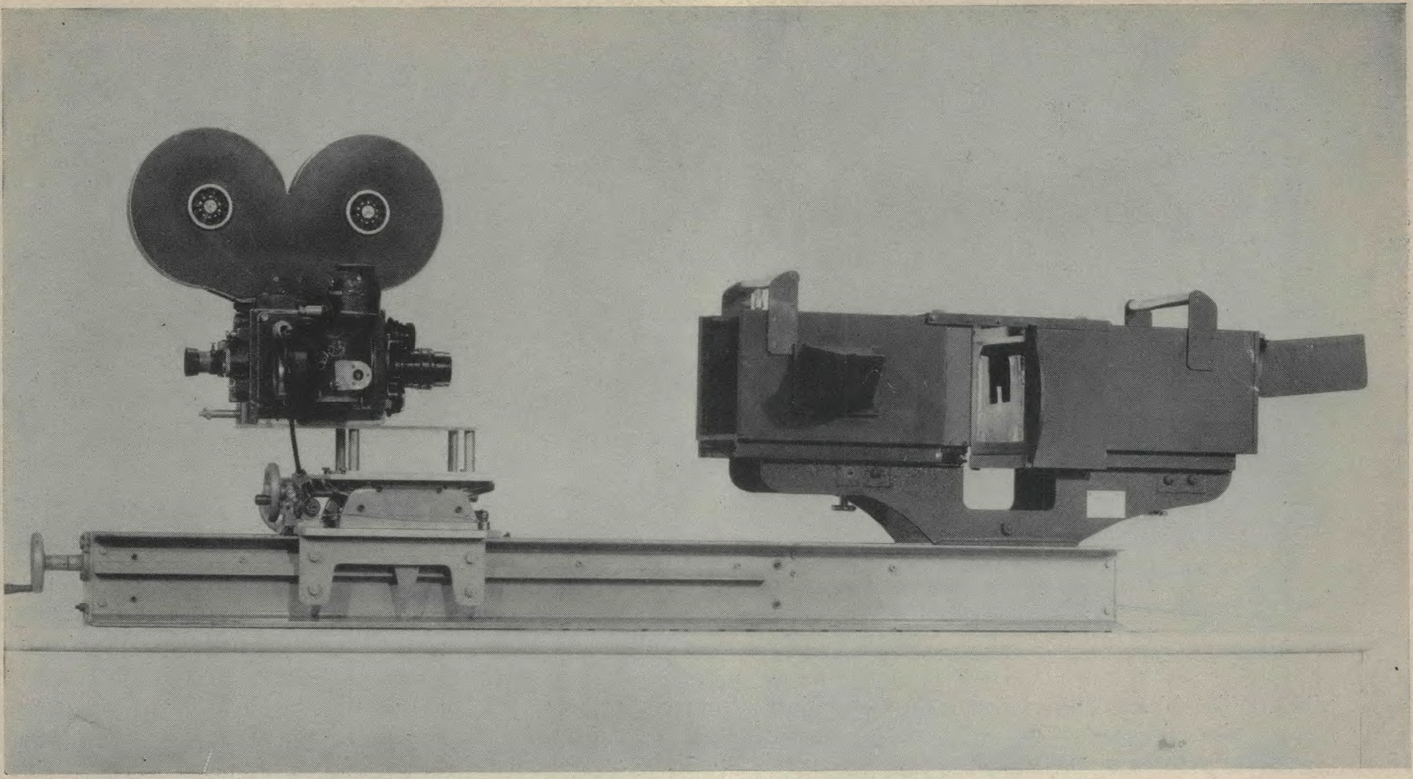

FIG. II—The Vistascope and camera. Shown above is manner in which Vistascope is employed in conjunction with any motion picture camera to produce composite shots combining photographs and live action.

The Vistascope--New Tool For Motion Picture Production

Novel foreground matting device utilizes composite photography, gives added scope and beauty to motion pictures.

By LOREN L. RYDER, A.S.C.
Paramount Pictures Corp., Hollywood, Calif.

THE VISTASCOPE is a new device and method of accomplishing and completing composite matte type photography in the camera at the time of action shooting. It can be used in conjunction with both motion picture and television cameras. It is applicable to both black and white and color.

This new device was invented by Achilles Pierre Dufour of France. It was originally called "Simplifilm" and patented both in the United States and abroad. Rights for all United States use and world distribution are held by Sol Lesser and Paramount Pictures Corp. (A new company known as Vistascope, Inc., has been organized and will make these devices available to all companies and persons desiring the use of same. The company address is 5451 Marathon Street, Hollywood 38, California.)

Basically the Vistascope is a foreground matting device in which the matte is a 5½" x 7½" still photograph with cutouts through which background action can be seen and photographed in proper placement, size and perspective, giving a composite of foreground matte and background action all in one photographic process. This should not be confused with background transparency photography where the camera photographs and composites foreground action against a background picture which has been rear projected on a transparent motion picture screen.

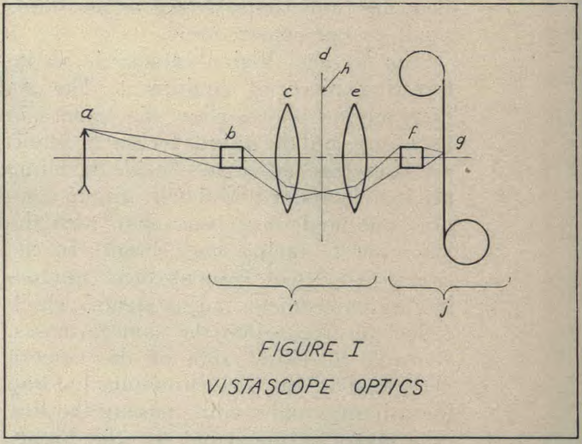

FIG. I—The optics of the Vistascope and their relationship with those of the motion picture camera. Light from object "a" is collected by lens "b" which focuses it through lens "c" to form an aerial image at "d". From there it continues through lens "e" causing it to be collected and fall on lens "f", which produces an image on the film "g".

The optics of the Vistascope are shown in Figure I. The Vistascope portion is bracketed as shown by "i" and the camera as shown by "j". Light from the object "a" is collected by the objective lens "b" which focuses the light through the field lens "c" so as to form an aerial image at "d". The light continues through the second field lens "e" which causes it to be collected and fall on the camera objective lens "f" which produces an image of the aerial image

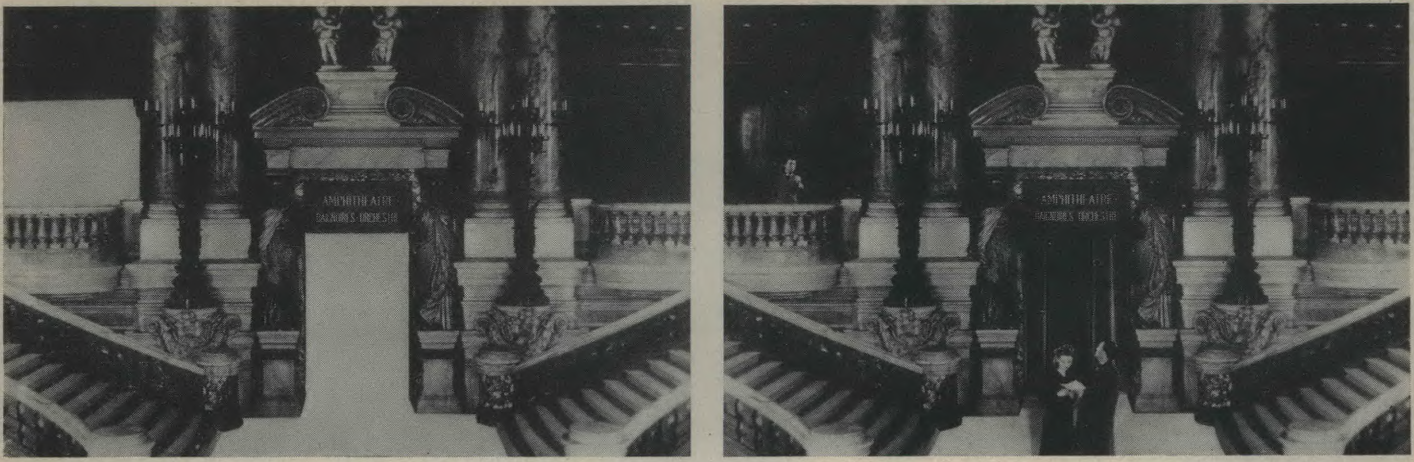

FIG. III—Photo at left is a photographic matte of entrance to French Opera House. Photo at right (Fig. IV) shows resultant scene made with Vistascoe utiliznig the photo matte. Actors, properly placed on bare stage, appear as filmed in the original locale.

"d" on the film or television camera mosaic at "g". If a still photograph of proper size is placed in the plane of the aerial image "d" facing the camera "j" and if the still is illuminated by the light "h", the camera "j" will re-photograph the still. If the still has cutouts and the action at "a" is properly located so as to have the aerial image fall in the cutout area, the camera will photograph a composite of the aerial image and photographic still.

The Vistascope objective lens system ("b" plus "c") has the same field of view as would be seen by a 32mm motion picture lens. The camera lens "f" is normally a four-inch motion picture lens. The light loss is approximately ⅔ of a stop. In planning scenes and setting up for shots it requires the same perspective and line matching considerations that are required for background projection. It will be found that most shots are not critical. The Vistascope direct-viewing finder is a great aid in line-ups. It also gives the director an opportunity to review the action in the full pictorial setting.

Figure II is a photograph of the Vistascope and camera. Figure III shows a matte of an entrance to the French Opera House. Figure IV shows a composite with live action. The people in the foreground are on the floor of a bare stage with only a small set piece for the door that is located behind them. The man on the balcony is on a grip parallel with a drape backing. Figure IV is a blow-up from the finished 35mm scene.

Figure V is a snow scene, figure VI a cabin with veranda and figure VII a matte which has been made by compositing scenes V and VI. It is to be noted that the cabin has peen photographically reversed in order to gain a better balanced pictuure. Further, certain perspective lines of the cabin have been changed so as to obtain the desired photographic effect. On the studio stage it was necessary to construct only the front wall of the cabin, then as viewed through the Vistascope, live action was photographed of people viewing the snow scene from the veranda.

Although the Vistascope is technically a foreground matting device, it is apparent from both Figures IV and VII that the matte can supply the depth as well as the scope to the composite picture. People can be made to appear to walk through arches and doorways, giving the effect of their being in front of or behind the plane of objects in the matte.

After line-up, a complete composite of aerial image and matte exists in the plane shown in Figure I at "d". When the camera is at a maximum distance of about two feet from the Vistascope, the camera sees and photographs the entire matte. A zoom shot is obtained by moving the camera in toward the Vistascope. This same camera movement can replace in-and-out camera dolly or boom shots. The camera can also be panned and tilted—always, of course, stopping within the matte boundaries. The zoom ratio is about two and one-half to one. During all zooming and panning shots the Vistascope remains fixed in position, thus avoiding the complexity of dolly tracks and boom handling normally associated with such shots.

The Vistascope is a new tool. It should aid in better story telling. It should give more scope and beauty to pictures and it should save money. On many shots it will be necessary to build only parts of sets and in some cases no sets will be required at all. The device is not a cure-all but it has many features of advantage over the old glass shots and other early methods of composite photography.

Many of the shots that can be made with this device can also be made by the studio special effects department. If this is true and if dollars can be saved,

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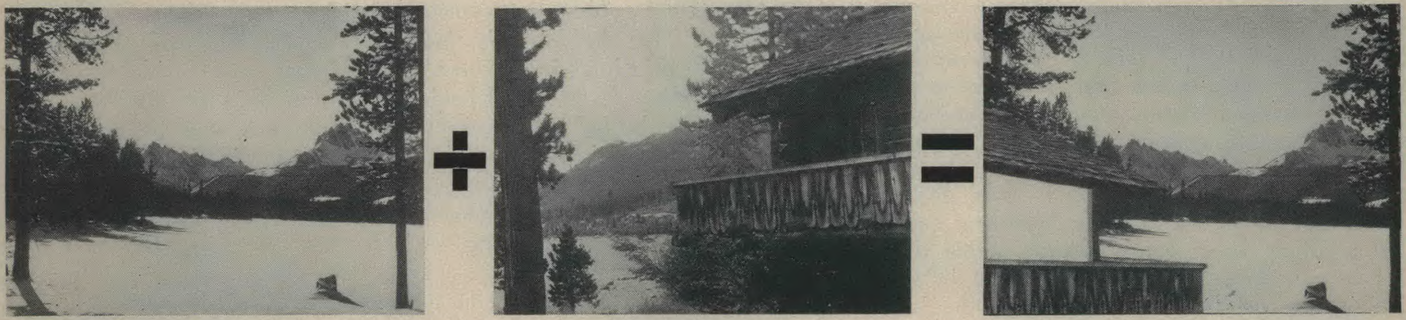
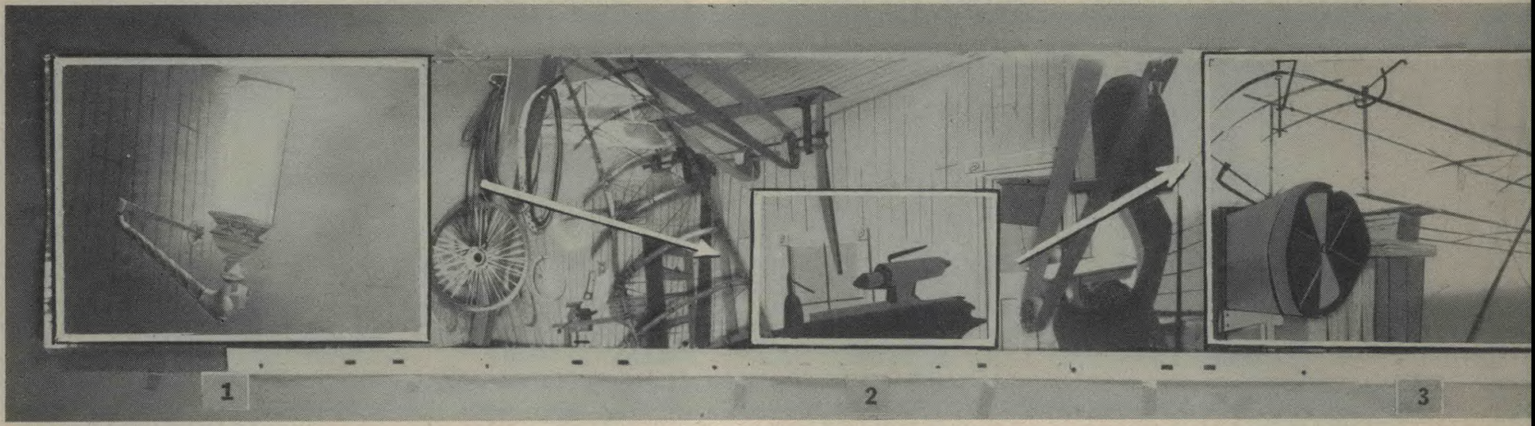


EVOLUTION OF A VISTASCOPE MATTE—(Figs. V, VI and VII) This shows how a suitable matte for the Vistascope can be made up from two or more separate photos. Here, matte at far right has been made by compositing a portion of the second photo with the first, and cutting out the window area for appearance of players in scene. Note that print of second photo was reversed and lines of cabin changed for improved pictorial effect.

—Photos Courtesy Paramount Pictures Corp.



IN THE "ANISTRATION" system, conventional animation methods are supplanted by an improved system which greatly reduces time required to effectively deliver a message with motion pictures. Animation is used only periodically over photography of the background, which is scanned progressively by the animation camera. A typical "anistration" background, shown above, depicts highlights in history of the Wright brothers during time they were building their first aeroplane in a gas-lit bicycle shop. The animation camera begins at 1 and moves to right, zooming down to picture area 2, thence up again to take in area 3. As narrator's voice describes the brothers' progress, camera continues scanning illustration and ends sequence at 4.

'Anistration'--Streamlined Animation Technique

A new method which employs illustrative art and a minimum of animation found ideally suited to the production of industrial, training and public relations films.

By ARTHUR ROWAN

"ANISTRATION" is the term givven a new technique of film making by the Raphael G. Wolff Studios of Hollywood where it originated. It derives from "animation" and "illustration." It combines an improved illustrative treatment with newly developed animation camera technique, which is ideally suited to the production of industrial, training and public relations films.

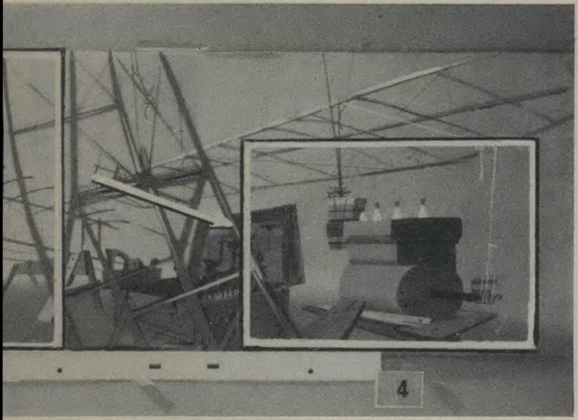
One of the chief attributes of "anistration" is its ability to compress time and speed up the delivery of a message or story. Where in the past a great amount of time and film has been expended in step-by-step animation or live action, this new system utilizes still pictures of scenes, people, etc., which are given a measure of realism through unique camera manipulation—a procedure described as a carefully-engineered plan of photographing animation cells and backgrounds that gives the pictorial result dramatic movement and life.

To achieve this new photographic technique, it was necessary for Wolff Studio engineers to redesign its conventional animation crane. It is said to be the only one of its kind in the industry. One of the first steps was to provide the crane with an extended platten to accommodate background illustrations of greater length. "Anistration" often calls for use of backgrounds up to six feet in length. Those used on normal animation cranes rarely exceed 18 to 24 inches in length. Also, the cell and platten arrangement provide for use of intermediate backgrounds, which enable the cameraman to achieve an illusion of third-dimension in some scenes. This is done by moving the background, the intermediate background and the cell progressively forward, each at different speeds, in making travelling or panning shots. Thus a third element is added to the "anistration" technique to further the illusion of movement in the scene or of the illustrated characters.

"Anistration" makes possible the use of more dramatic art work. Where conventional animation utilizes pen and ink drawings filled in with color, the Wolff Studio method employs rich illustrations having considerable detail. Thus, instead of animating a scene by photographing a great number of progressive cells in single frame exposures, Wolff Studio cameramen photograph or "scan" a single large illustration laid on the platten of the animation crane. Shooting one frame at a time, the camera moves toward or away from the scene for a zoom shot, or scans the illustration diagonally, finally coming to rest on a vital spot in the picture for a brief moment on the screen, while the narrator's words point up some pertinent fact. Limited animation is used at intervals to further heighten the illusion of action or to give movement to some object or character.

In the studio's most recent "anistration" production, "Freedom and Power," the picture opens with a panning shot of a group of Lexington Minute Men with their flintlocks ready for action. As the camera pans over the group, the narrator's voice emphasizes the determination of these men to protect their liberty, "even with guns if necessary." Here animation is introduced briefly in a close shot showing the gun triggers being cocked, thus accenting the narrator's words.

An example of one phase of "anistration" is shown in the reproduction of a typical background illustration at the top of this page. This has been diagramed to show the progressive movement of the camera over the whole of the picture. The



Brief sequences of conventional animation are injected at points 1, 2, 3, and 4, in which background supplies locale of the action. The screen time required for films made by this method is greatly reduced, with consequent increase in visual impact.

PHOTOGRAPHING the background. Here the large illustration is placed on platten of the animation crane and the camera operator prepares to set an amination cell in place for the next shot. The photography is accomplished in single frame exposures.

background was used in opening the studio's recent production "Airpower American," and begins with recounting the history of the Wright brothers—how they began their experiments in a crude gas-lit bicycle shop, finally building their first motor-driven aeroplane which was to make history for the intrepid inventors. As the narrator's words begin, the camera centers on the picture of the gas lamp hung on the wall of the shop. Here animation is injected momentarily to give life to the lamp: the gas mantle glows and spreads the warmth of its light over the room. Then the camera moves forward again, taking in a composite of the shop interior, finally zooming down to a closeup of the shop lathe.

Again conventional animation is employed briefly at this point to inject a note of realism into the scene and point up the narrator's words; then the camera is off again in its panning action and progresses through the shop scene until it comes to rest on that area which pictures the initial steps in the construction of the plane's framework. Here again, animation is invoked to point up an element of action, perhaps to buoy up the illusion of realism at this point; then the camera zooms down again, coming to rest on a picture of the plane's motor while the narrator concentrates on a vital fact related to this stage of the inventors' progress. An interval of animation is injected once more at this point to emphasize the narrator's thought.

Thus, through a combination of intricate camera movement, periodic intervals of conventional animation, and skillful narration, the story is carried quickly forward with a minimum of intrusion on the viewer. Unlike with live action or with contemporary animation, which takes longer to delineate a routine than it takes the mind to grasp it, once the germ of the idea is suggested, "anistration" quickly amplifies the idea, then follows through at a lively pace in keeping with the average mind's ability to grasp and comprehend.

In doing this story in live action or by figure animation, three times as much film would be required. The picture would take three times as long to screen with perhaps no material increase in message impact.

Actually, the animation camera does not "pan" or "zoom" in the manner employed in conventional cinematography. Such movements are accomplished a step at a time in single-

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CAREFULLY DETAILED shooting script is furnished the camera operator. It shows number of single frame exposures for each cell or position of the camera and the direction of movement of the backgrounds on the platten, as well as any progressive movement of the camera. The crane is a special development of the Raphael G. Wolff Studios.

Background Projection Photography

Process shots are action scenes filmed on the sound stage in front of scenes projected on a translucent screen from the rear. The trick is to make such shots appear as though filmed entirely on location.

By CHARLES L. ANDERSON

A PROCESS shot from MGM's "The Wild North" filmed on the sound stage, picturing canoeists shooting rapids. Water in background is a motion picture projection.

TECHNIQUE of shooting foreign street scene on sound stage is shown here. Players walk on treadmill in front of BG projection of scene photographed earlier on location.

THE TECHNIQUES involved in making process shots today are so highly perfected that much of this type of photography is rarely distinguishable in a motion picture, even by experienced cameramen.

Process shots have been the means of saving studios considerable production time and expense in filming scenes for pictures having a foreign locale, or when certain scenes call for important dialogue that could not be successfully photographed on locations outside the studio. An example would be a scene enacted inside a moving automobile. In such instances, the background consisting of a street scene, as observed from the rear and side windows of a moving automobile, would first be photographed from a camera car. Later, a print of this film, called the background plate, would be projected on a translucent screen set up at the rear of a stock auto interior mockup on the stage. Here the detailed action would be enacted and filmed. In the finished picture, the scene would appear to have been filmed in an automobile while moving along a city street. Most readers will recall having seen such scenes in motion pictures.

Making process shots in Hollywood studios is a task usually executed by a special department set up for this type of work. Often the director of photography assigned to the picture will not have a hand in making the process shots at all. Indeed, many studio cinematographers have yet to photograph their first process shot.

Because many readers among both amateur and professional cameramen have expressed interest in the subject, we shall outline here in a general way the procedure involved in making process shots, rather than attempt a technical treatise on the subject.

A basic work unit for process consists of the following:

1) Motion picture camera with interlock motor.

2) Translucent projection screen.

3) Motion picture projector having interlock motor.

On the sound stage where the process shot is to be made, the BG projector is set up some distance behind the translucent screen from which position it projects the BG plate. In front of the screen, the camera records the composite scene before it, which consists of the scene on the screen plus any players. props or scenery placed before it.

The interlock motors on both camera and projector insure that the shutters of both machines open and close simultaneously. If they did not, a distracting flicker plus blank frames would occur in the finished picture. Exact synchronism between the two machines is therefore essential.

Another important detail is positioning the camera so it will not pick up a "hot spot" on the screen. In some cases, the scene projected on the BG screen tends to appear brighter in the center than at the edges. Process technicians have worked out a number of methods for coping with this problem, one of which is projecting the BG plate at a slight angle with the screen tilted back slightly, as shown in the diagram below. This diagram also shows a typical setup for making a process shot. Latest type background projectors are so designed that the hot spot problem is minimized if not eliminated entirely.

Silent operation of the BG projector is important, too, in sound process work, and blimps are usually supplied to house

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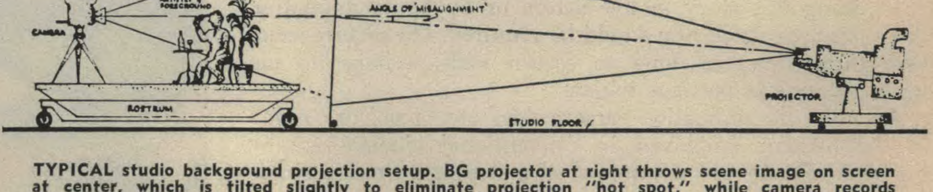
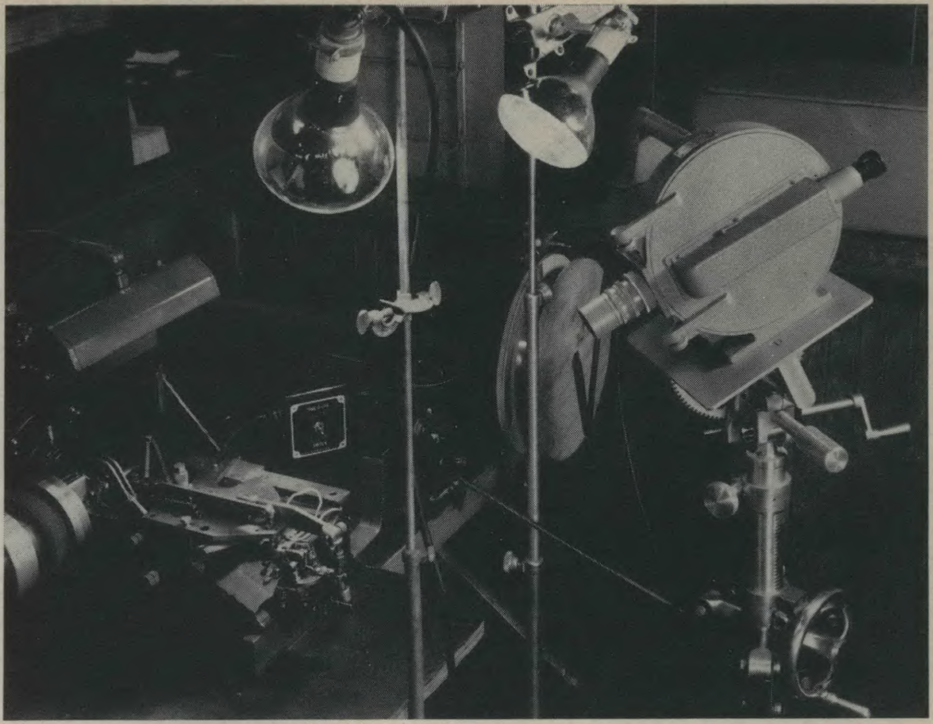


TYPICAL studio background projection setup. BG projector at right throws scene image on screen at center, which is tilted slightly to eliminate projection "hot spot," while camera records action staged before it against BG projection.



THE FASTAX high-speed motion picture camera in a typical set-up for a time-magnification study of an industrial operation. In this shutterless camera, the film moves continuously.

High-speed Cinematography

High-speed photography can replace much of the animation now used in instructional films; in the entertainment field, this new medium can be used advantageously in producing short subjects of greater scope and interest.

By JOHN H. WADDELL

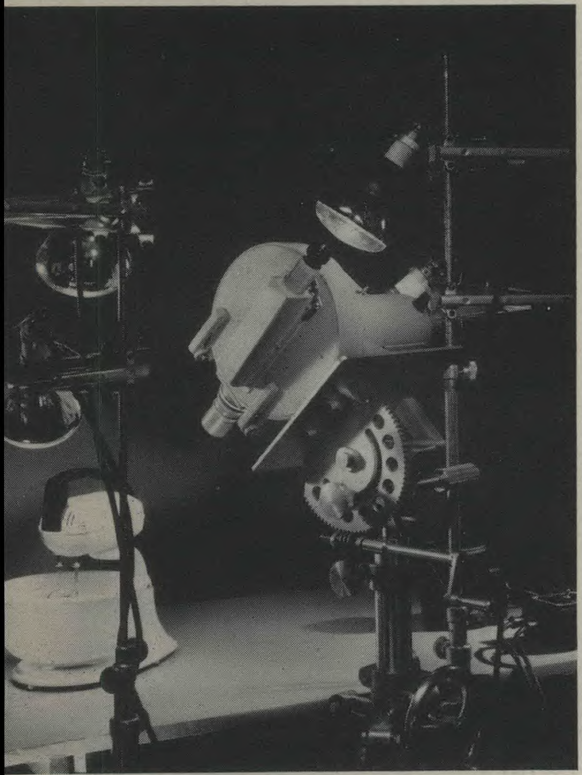
Wollensak Optical Co., Rochester, N. Y.

HIGH-SPEED MOTION PICTURE photography is unofficially celebrating its twentieth anniversary this year. It is one of the most outstanding engineering developments for analytical studies and illustrative purposes yet to appear on the American scene.

There has been a major misconception and misunderstanding of the problem of high-speed photography by some cinematographers. One of the few exceptions, however, has been John Bishop of Paramount Studios. He has spent many hours learning the difference between the problems which surround the taking of intermittent pictures and the taking of pictures at rates up to 16,000 per second, (not 16).

A Hollywood cameraman, in the early part of 1942, assessed the value of high-speed pictures for the Signal Corps. As a result of his evaluation, the Signal Corps made practically no use of this medium until about 1945. His comments at the time were that the pictures were soft, and there were no sharp frame lines. In reference to the soft pictures, no mention was made that oftentimes soft focus lenses are used in Hollywood on close-ups to eliminate blemishes and scars.

In reverse, John Bishop and Eleanor Gerlach, at the Institute of Medical Research, have been doing high-speed motion pictures in color, which are practically as sharp and clean cut as those taken with a Technicolor camera. They have learned the techniques which have been necessary to get pictures of top-flight quality.



HIGH-SPEED motion picture cameras have a wide range of uses, from analyzing motion of mechanical equipment to producing unusual motion pictures for educational purposes. The operators of these cameras must know the fundamentals of their operation as well as understand the special lighting necessary to achieve results.

In order to get a better understanding of high-speed motion pictures, and to understand the two different types of pictures, namely, intermittent and high-speed, a number of basic principles must be explained.

In the normal motion picture camera, the film is brought to rest when the shutter is closed and remains at rest as the shutter opens and closes. This shutter opening may vary from a few degrees to approximately 170 degrees. As a general thing, though, this shutter is used in such a position that the exposure cycle is about one-third of the reciprocal of the picture taking rate. In order to reduce the image movement during the exposure, the shutter is closed down, but oftentimes the illusion of these sharply defined pictures produces eyestrain. Therefore, the resolution of taking pictures under these conditions has as its limits the resolving power of the optical system, or photographic objective, and the resolving power of the film.

In high-speed motion picture photography the film is moving continuously. There is no intermittent movement that will operate at frequencies necessary for the time magnification studies desired. Both Bell & Howell and Mitchell have their high-speed movements with pic-

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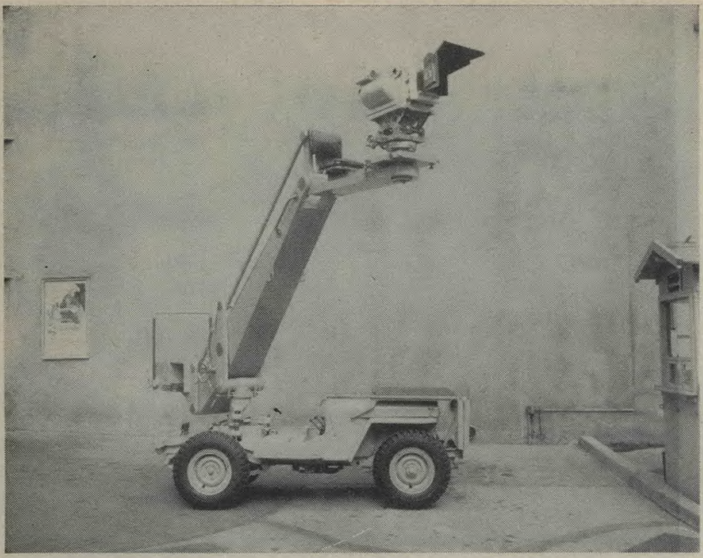
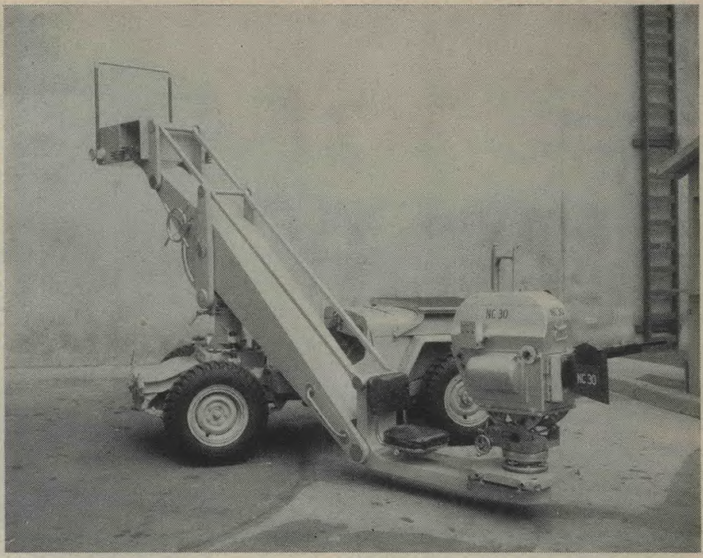


VERSATILITY of MGM's Jeep Camera Crane is revealed in photo above which shows maximum height obtainable (12′ 8″), also ability of boom to swing full 360°.



LOWEST position of crane brings camera lens within 18 inches of ground. Designed especially for location use, crane makes off-lot filming easier.

Jeep Camera Crane

MGM's new mobile unit for location photography.

By RALPH LAWTON

A MAJOR CONTRIBUTION to economy in production of motion pictures on location is the ability to move rapidly from one camera setup to the next and making the camera ready for resumption of shooting with a minimum of delay.

For this, the most important requisite is a mobile carrier for the camera having the added facility of a camera crane or boom, and which permits moving the camera quickly from one setup to another without the necessity of having to disengage it from a tripod or other mount, then reassemble it again.

To meet his studio's need for a camera carrier of this type, John Arnold, A.S.C., Metro-Goldwyn-Mayer's executive director of photography, has developed a new camera crane mounted on a Jeep.

"Few camera cars or cranes heretofore available to our cameramen for location work have provided the desired speed, ruggedness, and flexibility," said Arnold. "There has been a great need for a compact camera crane of moderate size affording all the convenience and flexibility on location that we now obtain on the sound stage with our R-O crane.

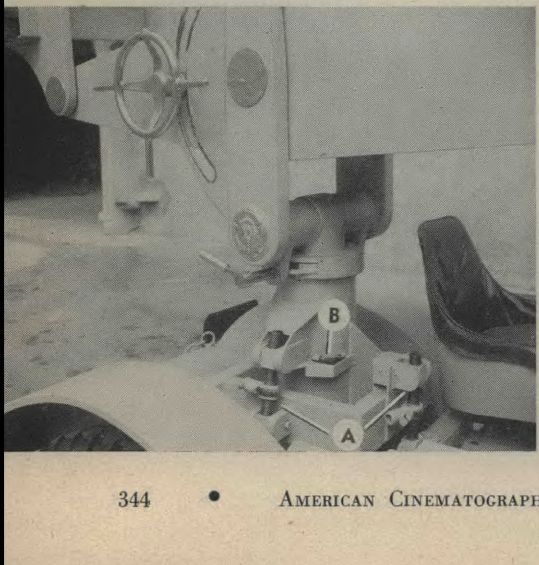
"When the war-time Jeep was introduced, we saw in this 4-wheel-drive vehicle the basic foundation for the mobile camera carrier we hoped to develop for use especially in remote and rugged locations."

After four years of experimentation and development, MGM now has in operation the first of Arnold's new Jeep camera cranes, which is pictured on this page.

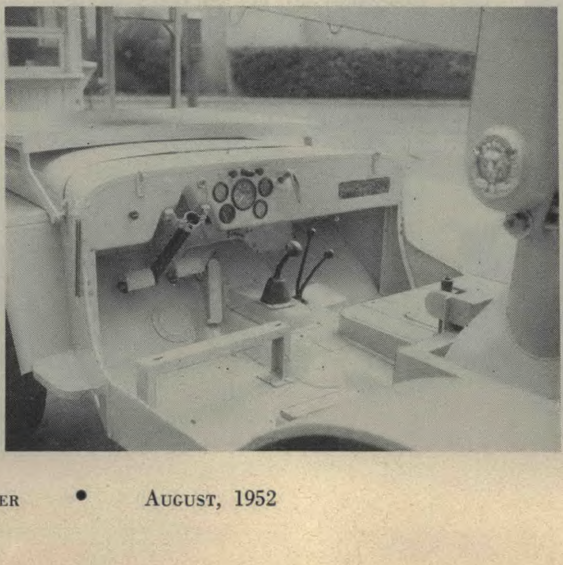
Upon completion, the prototype crane underwent severe tests. Especially impressive were the results obtained with the crane elevated to maximum height, and with the Jeep traveling at various nominal speeds. Test results show that the unit can successfully be used to

(Continued on Page 352)

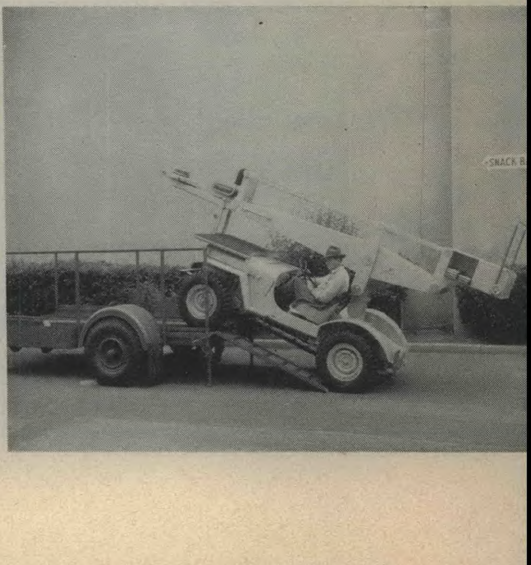
TWO ratchet-operated leveling screws (A) make it possible to quickly adjust crane column, insuring a level camera when working on hilly terrain.



JEEP steering wheel and seat are instantly removable to permit uninterrupted operation of crane arm in full 360° circle.



FOR distant locations, Jeep-crane is driven up on its special trailer, which is hauled behind location transportation trucks.



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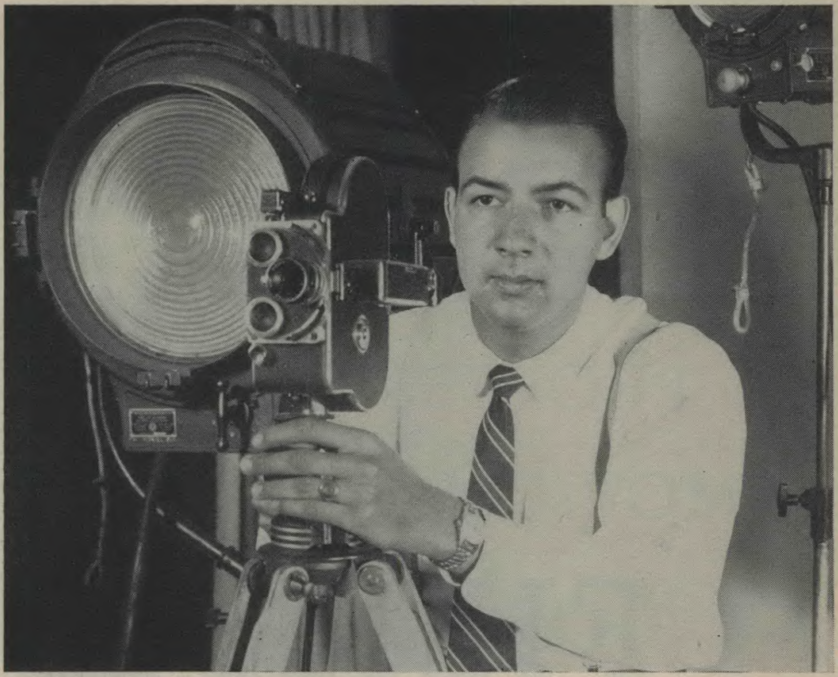
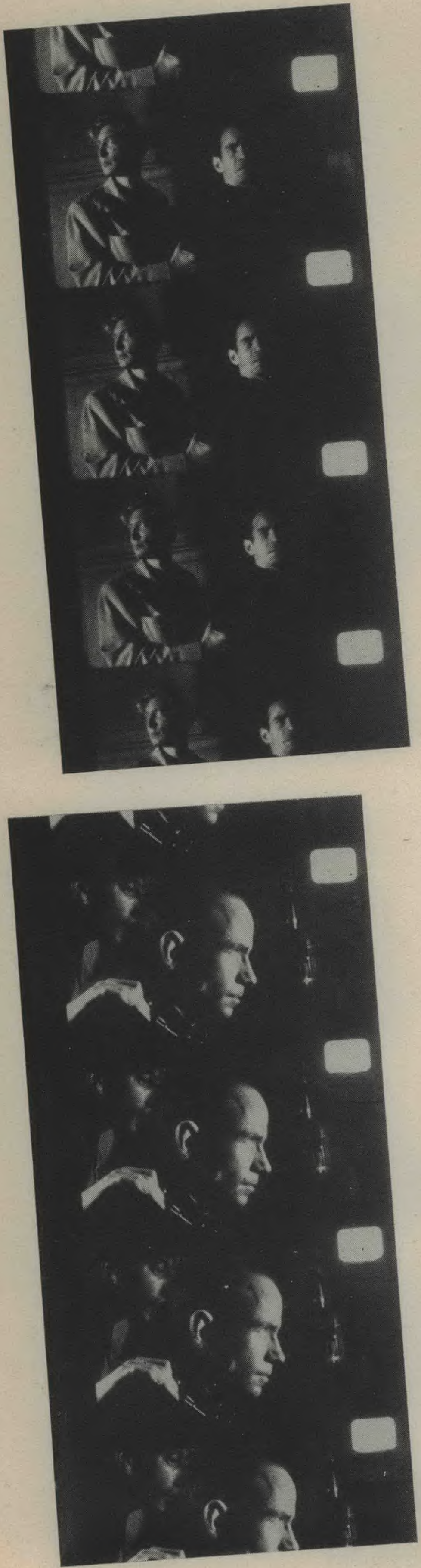


JOHN F. COWART, of Atlanta, Georgia, has entered three American Cinematographer film competitions, winning an award each time. Cowart switched from his 16mm Bolex to an Auricon Cine-Voice sound camera to make "A Story Of A Disc Jockey," his first 16mm sound-on-film effort. It was one of the Top Ten award winners for 1952.



TWO CLIPS from Cowart's winning film, reproduced at left, illustrate the professional-like lighting he achieved with the use of photoflood and photospot lamps.

Rugged Individualism In Amateur Movie Making

The third in a series describing some of the technical aspects of winning films in American Cinematographer's 1952 Film Competition.

By JOHN FORBES

MUCH HAS BEEN STATED in recent months regarding the problems encountered by the lone amateur wishingto produce serious movies. As M. G. Livada said in his article, "Needed—A New Deal For Serious Amateurs," in the May American Cinematographer, ". . . the continuing improvement of standards of amateur films throws the cine amateur of today into a grave dilemma. He has to choose between working alone and working within a film society or cine club."

John F. Cowart, of Atlanta, Georgia, chose the former course in making his prize-winning film, "A Story Of A Disc Jockey," one of the Top Ten in American Cinematographer's 1952 Amateur Motion Picture Competition. The film is an outstanding example of what can be accomplished by the lone amateur working unaided by technical assistants, and it becomes even more remarkable when we consider that the film has lip-sync sound throughout.

"I do not think it a handicap not to have a crew of helpers when attempting to produce a serious amateur sound-

(Continued on Page 350)

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ED OLSEN bought a 16mm camera to shoot movies of ski events, made a documentary of the Colorado River which won an Academy Award for Warner Brothers. Olsen is now cameraman for Carl Dudley Productions.

DAVID BRADLEY (center) once made serious movies of the classics. MGM saw his "Julius Caesar," made him a director. Here he's consulting with scriptwriter and member of cast of his first MGM film.

Amateurs Who Became 'Pros'

What are the serious movie amateur's chances of becoming a professional cameraman? Here are case histories of a few who have found success in various professional fields.

By A. D. ROE

IS THERE A PLACE in the professional motion picture industry for the amateur movie maker with ability? Can the ambitious cine amateur hope to progress to the ranks of the professional cinematographer in the motion picture studios? These are questions that, if not outwardly expressed, at least exist in the minds of hundreds of serious 8mm and 16mm amateur movie makers. The answer is a qualified "yes." First it must be said that little opportunity exists at present for the advanced amateur to become a studio cameraman. The reason, of course, is that there still are more experienced professional cameramen in Hollywood than there are jobs — even though television film production in recent months has absorbed many of the formerly unemployed.

There are other professional fields, however, that hold promise for the expert or semi-professional 16mm cameraman—any one of which could lead to Hollywood. There are numerous instances where former 8mm and 16mm movie makers have found rewarding work behind professional cameras in such fields as industrial, educational and television film production, and in the lecture film field. These are the most fertile fields at present for the amateur

RICHARD THIRIOT, Salt Lake cine amateur, graduated to filming college athletics, then to television where he is presently in charge of KSL-TV's motion picture department. He's shown here (behind camera) preparing to shoot a TV commercial for a Ford Motor distributor.

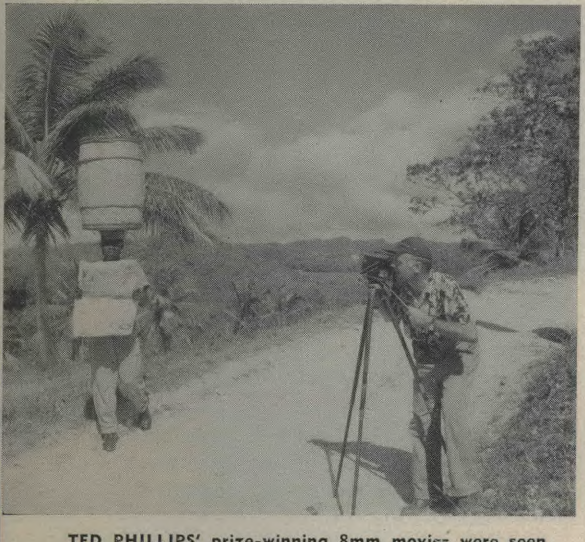
cine filmer looking forward to a career of cinematography.

One of the few instances in which Hollywood sought out an amateur movie maker for a professional career in Hollywood is the case of David Bradley of Winnetka, Illinois. Bradley, years ago, took up 16mm movie making as a hobby, and pursued it more diligently perhaps than did most of his contemporary hobbyists.

Movie amateur Bradley gave citizens of Winnetka their first taste of film making on a professional scale when in 1937 he cast a number of the town's most personable and talented citizens in his first ambitious 16mm motion picture — a feature-length production of "Treasure Island." Even more ambitious were his 16mm versions of "The Christmas Carol," "Emperor Jones," "Oliver Twist," and "Peer Gynt," which followed with professional regularity.

Following advent of World War II, Bradley journeyed to Hollywood to enter Army Signal Corps training for combat cameramen. The schooling was conducted by some of the motion picture industry's top directors of photography. After his discharge from the army, and with a considerable education in professional movie making now under his belt, Bradley returned to Winnetka and resumed his picture making. He produced "Julius Caesar" in 16mm sound. This ambitious production received wide exhibition and its acclaim in the press served to bring Bradley's exceptional talents to the attention of Metro-Goldwyn-Mayer studios. Dore Schary requested a screening of his picture and summoned Bradley to Hollywood. He was put on the studio payroll and groomed for a berth as producer-director. Bradley recently completed his first picture—"Talk About A

(Continued on Page 356)



TED PHILLIPS' prize-winning 8mm movies were seen by Burton Holmes who made Ted his chief cameraman, sent him to foreign lands to shoot his lecture films.

Is 'On The Nose' Exposure Always Desirable?

It is often possible for the cine amateur to create unusual moods in his pictures where the general tone is at variance with the rest of the picture.

By LEO J. HEFFERNAN

(Reprinted From Metropolitan Motion Picture Club Bulletin)

IN THIS CORNER we have a novice filmer whose fondest wish is to produce correctly exposed scenes, which will be the envy of all his friends. He tries and tries, but it is only once in a while that he attains his goal.

Now, over here we have an "advanced" moviemaker who never has to ask himself, "Wha' hoppened?" He really does a job with the exposure meter. The exposure is on the nose every time. He knows how to compensate for this, that and the other thing, and the result is that he gets consistently good, even, and what is referred to as "correct exposure."

Further along the moviemaking corridor we come across another chap who is asking himself, "Is correct exposure always desirable?" This sounds like heresy, but actually the lad has a point, as every moviemaker finds out sooner or later.

Correct exposure is a matter of taste, to some extent. A filmer whose esthetic sensibilities lean toward full, rich colors will regularly set his lens diaphragm one full stop smaller than that used by an amateur whose eyes are pleased by pastel shades on the screen. In between these two is the average filmer who thinks the other two are balmy. Which one is right? All three come out with evenly exposed footage.

Admittedly, it is possible to create moods in a motion picture by introducing sequences whose general tone is at variance with the rest of the picture. If a sequence is to depict gayety or frivolity, slight over-exposure might set the mood. If a feeling of foreboding or drama is needed, then a certain amount of under-exposure is indicated. These things are not hard to figure out but, it is seldom that amateurs take advantage of this device — a well-used tool in Hollywood.

Thus we have the prospect before us of a single motion picture which, for effects deliberately created by the filmer, includes footage which is over-exposed, some which is correctly exposed, and still other footage which is under-exposed. Now, if the job is done right, the audience will respond to the various moods without being aware that some of the scenes are lighter or darker than usual.

This does not mean that it is good cinematography when light and dark scenes pop up haphazardly throughout a movie. The transition must be brought about subtly as, for example, in a sequence where a storm is brewing. It would commence with light-toned shots, and each scene that follows would be noticeably darker than the one which preceded it—so that the screen would be quite dark at the height of the storm. A gloomy mood will prevail and it will not occur to the audience that most of the shots were given incorrect exposure.

Sometimes it will not be until after the film has been processed that a moviemaker will realize that he passed up an opportunity to create a mood. How often have you said to yourself, "If only I had given that back-lighted scene less exposure!" A back-lighted shot must be slightly underexposed if the mood or effect is to be reproduced, and this is true of whole sections of a movie where an adjusted exposure might have keyed the footage.

Recently I was making a movie of a natural wonder, and I devoted a whole day to filming one sequence. While shooting, I was wet from head to foot, and I admit that it was a miserable job throughout; and I hate personal discomfort. Naturally, I calculated the exposure carefully so I would not have to make those particular scenes over again.

In the hotel room that night, I reflected on the day's events to reassure myself of the correctness of the exposure. It was then I realized that the shots would have been infinitely more effective if they had been one full stop under-exposed.

I re-photographed the scenes the next day. When the film was processed I found that the correctly exposed footage lacked punch, whereas the under-exposed scenes were greatly enhanced by the small amount of under-exposure given them. In this instance, of course, the subject material was particularly adapted to this unconventional treatment. END

RUGGED INDIVIDUALISM

(Continued from Page 346)

on-film production," Cowart said. "The only helper I had on 'Disc Jockey' was 18-year Barbara Elliott. Barbara served as script girl, and often helped me handle electric cables for the lights and sound equipment, connect plugs, and do other various jobs."

Every scene in the movie was filmed after midnight in various locales in the city of Atlanta. Since much of the action takes place in a radio station control room, it was necessary for Cowart to wait until a local radio station, whose control room he used for many scenes, went off the air at midnight.

"I have my own Cine-Voice sound camera," said Cowart," and this equipment along with my lights, amplifier, etc., was set up in the control room several nights after twelve o'clock."

The opening scene in the film shows a disc jockey relating events of the story which is pictured in retrospect. Cowart has always held that utmost realism is an essential element for any amateur film, and he therefore chose a real-life disc jockey, Bill Mims, for the part of the disc jockey in his picture. No professional actor could have turned in a better performance.

"By actually getting people to play themselves on the screen," Cowart said, "I eliminated much of the artificiality that marks so many serious amateur films. Since good voices are very important in sound films, it was equally to my advantage to use people who use their voices in making a living; thus I chose as many of my actors as possible from among friends in the local radio field."

The policemen seen in the film are the real thing, too, as are the police cars. The Atlanta police department generously loaned Cowart one of its cars and permitted a number of police officers to take part in the picture. "Several times, during shooting," said Cowart, "urgent radio calls summoned our police car and officers away. But they always returned as quickly as possible, whereupon we would resume shooting."

Many organized cine club groups setting out to film a picture have rarely demonstrated the organization evidenced in Cowart's film, and few of the pictures made by such groups can boast the professional finish which Cowart has given his production. But perhaps this was due to the very fact that he worked virtually alone, and was not subject to the whims and vagaries of group opinions. Conflicting personalities therefore did not have to be considered in selecting the cast.

"Whenever I need a particular character to fill a role," said Cowart with modest self-assurance, "I go out on the street and look for him. I may find him walking along Peachtree street, as I did Bob Smith, or in a school room where I spotted Joe Wray. Listening to a broadcast led me to Bill Mims and Dan Ross, the radio announcers who appear in 'Disc Jockey.' "

Every person whom Cowart has approached to portray a role in his films has cooperated wholeheartedly but one, he says. "This was a toothless, baldheaded, hawk-eyed old fellow — a real local character — who steadfastly refused to appear before my camera, preferring to shoot pool in a neighborhood billiard parlor, instead!"

Because the entire story of "Disc Jockey" takes place at night, Cowart's photography was by artificial light. It is the lighting that is one of the standout features of the picture, and demonstrates that among all the professional techniques of movie making which Cowart has so assiduously studied, lighting has received more than uncommon attention. Despite the fact many of the scenes appear to be lit with professional lighting equipment, Cowart said none was used on this picture.

"I used five lights in all in filming the entire picture," said Cowart. "These consisted of three photospots and two photofloods."

Some of the impressive lighting effects he achieved with this modest equipment is evident in the two film clips reproduced here from the picture.

Filming the night exteriors took place following a sudden change in the weather. One evening, a cold rain fell unexpectedly, followed by freezing temperature. The rain, falling on the hot photolamps, caused them to explode, forcing Cowart to scurry around for replacements, a difficult task after midnight anywhere.

Cowart found the feat of handling his sound equipment in addition to the photography relatively easy. For operating power he used regular 110-volt domestic current instead of batteries. When working around the radio transmitter the first night, an annoying hum intruded in his sound system. But changing position of his microphone eliminated the trouble with very little delay to production. It was the only trouble encountered with the sound system, Cowart said.

Cowart used Eastman Kodak Super XX panchromatic film, single perforated, for the entire production. An exposure meter was not used at all in determining exposures. "I have become so accustomed to working with photofloods and photospots," he said, "that I have come to know the correct lens stop to use." Exposures are pretty near perfect throughout the picture.

All this is submitted as evidence that, in movie making as with anything else, "where there's a will, there's a way." Admittedly, few amateur movie makers, working alone, are able to undertake a pretentious film production. It does take some assistance to tie up the loose ends and keep the production from going off on a tangent. The secret, it seems, is having the ability to carefully *pre-plan* the production, to know how to persuade desirable people to take part in the production as actors, and in addition to knowing how to achieve good lighting and photography, to have a flair for direction. All these attributes can be developed in various degrees of perfection through diligent study and no little practice. Practice makes perfect, and you have to shoot a little film at regular intervals in order to perfect your skill.

HOLLYWOOD LAUNCHES 3-D FILM PRODUCTION

(Continued from Page 337)

complex problems or situations in attempting an extreme effect called for in the script was it necessary to talk it over with Mr. Oboler. In such instances, the many tests we made previous to production served as an excellent yardstick.

The operating crew working with Natural Vision cameras must be exacting in their work—much more precise than in 2-dimension cinematography. The mirrors, which are the critical center of the system, must be carefully positioned and checked, both before and after making each shot. Thus if a mirror is found out of adjustment after the shot—a rare thing—it can be corrected and the scene reshot immediately.

Over a period of time, many interesting discoveries have been made in the operation of the camera. We have learned how to create interesting variations in the perspective by adjustment combinations between parallax and focus, or by changing the parallax only or focus only, as the scene is being photographed. Here, precision on the part of the camera operator and assistants is most essential.

In shooting "Bwana Devil," the camera was mounted on a mobile camera car, called the "Blue Goose," for almost every take. This car, a converted 4-wheel-drive Army weapons carrier, has a fork-lift and platform on the front, operated hydraulically. This outfit enabled us to use the camera in practically any locale of the rugged mountainous location 45 miles north of Hollywood.

Although Natural Vision cameras are not limited to static camera shots, we used no moving camera shots in this production, chiefly because of the rugged terrain in which we worked. The peculiarities of 3-dimension made this possible because 3-D gives a scene such unusual depth and perspective that there is not the need for camera movement that characterizes conventional 2-dimension movies. Obviously, this also contributed to speeding up production through elimination of time-consuming additional camera setups. Valuable time is saved because it is unnecessary to model for lighting, as in 2-dimension pictures; the 3-dimension factor takes care of modeling, giving as it does depth, roundness and added perspective to the scene. Indeed, after noting the pictorial results after the first days' rushes, director Oboler thereafter came to settle for a single take on many scenes.

One of the characteristics of 3-dimensional movies, which made it such a spectacular innovation years ago when first presented to the public, is the way objects can be made to appear coming right out of the screen and into the audience. Today, such freak innovations must be avoided, Oboler believes, if 3-dimension movies are to assume proper stature. For this reason, such effects are employed rarely in "Bwana Devil" and then only to emphasize some particular action, as when an African warrior throws his spear directly towards the camera. In anther instance, the ominous mood of the warriors is pointed up when, in a scene showing them advancing toward the camera with spears raised, the menacing spears project out of the screen — an unusual dramatic effect.

There is a great deal still to be learned about photography with this equipment, something that will be accomplished by trial and error, just as have the developments which we have come to employ today as standard practice. We discover something new almost every time we project dailies; this leads to new experiments and ultimately perfection.

Natural Vision's 3-dimension system does not entail costly changes in theatre projection equipment. All that is necessary is a simple interlocking drive, joining the movement of both projectors so that the machines operate in synchronism. Already, sensing the dawn of the era of practical 3-D motion pictures, several manufacturers of theatre projec-

(Continued on next page)

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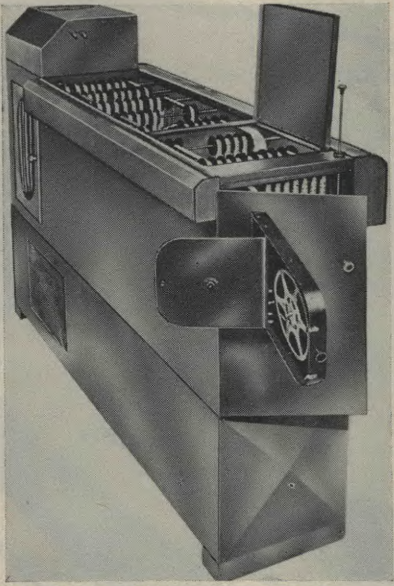

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tion equipment have developed linking apparatus for their machines.

Both Oboler and Gunzburg are confident the public will readily accept the Polaroid spectacles necessary for viewing Natural Vision motion pictures. Some in the industry contend that need for wearing viewing spectacles will very soon turn public favor against stereo movies; but Gunzburg, in rebuttal, points to the tremendous public acceptance of stereo movies exhibited at the Festival of Britain last year—which required use of Polaroid spectacles for viewing.

As a means of developing the utmost interest in Natural Vision 3-dimensional films, and particularly in Arch Oboler's initial production, "Bwana Devil," the film will be road-shown throughout the country for an undetermined period. Thereafter, the picture can be shown in 2-dimension, simply by screening one of the dual prints used in 3-D exhibition. Thus, any Natural Vision production has the added factor of being available for exhibition as either a 2-dimension or 3-dimension production.

The function of the Natural Vision Corporation is to lease its 3-D camera equipment and to supply experienced camera crews to motion picture producers; also to supply the Polaroid spectacles necessary for viewing. The company holds a franchise for exclusive distribution of the spectacles in the motion picture industry.

Some idea of the enthusiasm which has been generated by the developments of Natural Vision and particularly by Oboler's first 3-D feature in color is the fact that a second Natural Vision camera is now being constructed, and Arch Oboler has script-writers working on the story for his second 3-D feature production.

JEEP CAMERA CRANE

(Continued from Page 344)

make traveling shots with either a black-and-white or Technicolor camera, although the Jeep crane was not designed originally for moving-camera shots.

The column assembly supporting the crane is mounted over the rear axle of the Jeep. This mounting is such that the crane may be removed from the Jeep at any time and mounted on another carrier.

The first photo at bottom of page shows an important detail which increases the value of the Jeep crane when working on hilly or uneven terrain. Two ratchet-operated leveling screws (A) permit squaring up the supporting column to insure a level camera whenever the Jeep is used on uneven ground.

A two-way level (B) indicates when exact level is achieved with the ratchet adjustments.

To insure rigidity of the crane, a screw jack at either side of the chassis locks the Jeep frame securely to the rear axle, nullifying action of the springs.

The crane arm is somewhat shorter than that of the R-O crane and is similar in construction to the latter. The arm is of "skin-stress" construction—that is, it has no conventional framework, but is made entirely of 12-gauge steel plate and entirely welded. Instead of reinforcing cross-members, there are baffle-plates at intervals within the assembly which strengthen the unit and prevent torque. The crane arm is supported in a U-shaped cradle mounted on the pivotal column, and there is provision for manually locking the arm in any position, with or without the balancing plates in the weight buckets. The latter, incidentally, have been designed along new lines to provide more even distribution of the weights used in balancing the camera and operator.

The camera platform and the accompanying linkage, which maintains the camera platform in level position regardless of angle of the Jeep, is essentially the same as that of the R-O studio crane. The camera mounting base is also the same and there is the usual swivel-seat for the operator.

The range of the crane affords using the camera with the lens as low as 18 inches from ground level or at a maximum height of 12 feet 8 inches. With the camera used at lower levels it is possible to swing the crane arm a full 360°. This requires first removing the seat and the steering wheel of the Jeep—a matter which was considered in the Jeep modifications.

Because of these practical features, it is possible to change camera setups on location in a third of the time normally required without the Jeep crane. A slight change in camera angle often can be accomplished without moving the Jeep at all, simply by swinging the crane arm to a new angle or changing the height of the camera. When moving the camera to a new location is desired, this may be done quickly and with the camera ready for immediate use. Having a compound transmission, the Jeep will negotiate the most rugged terrain, giving the camera access to locales which heretofore have been inaccessible.

To transport the Jeep crane from the studio to a distant location, it is driven up on a special trailer under its own power, and the trailer hitched to one of the transportation trucks.

The Jeep crane is scheduled to receive its first use in a major production this month when the studio begins filming "Vaquero" in Kanabe, Utah. END

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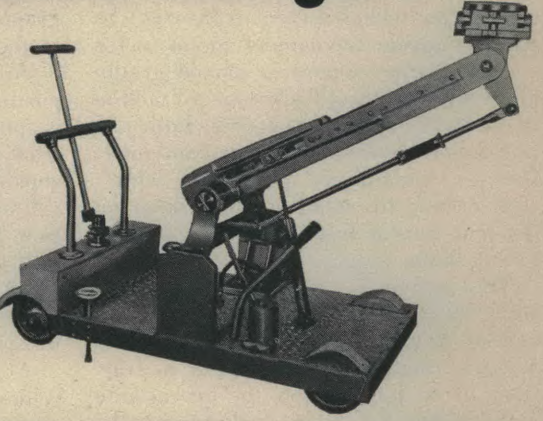

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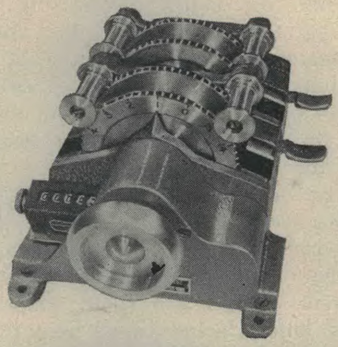

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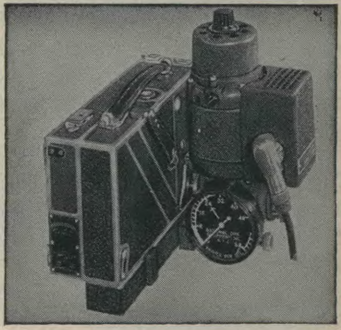

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'ANISTRATION'

(Continued from Page 341)

frame photography. To produce the illusion of the camera panning to the right, the background on the platten is moved progressively to the left a fraction of an inch between exposures. To make it appear the camera zooms in for a closeup, the camera is moved gradually closer to the illustration a fraction of an inch between exposures. Both pan and zoom movements may be combined; also it is possible to produce a "whirl" shot merely by rotating the camera on the lens axis a fraction of an inch between shots.

This action is controlled with precision by the camera operator. Hand cranks having micrometer scales and Veeder counters, which register in fractions of an inch, enable the operator to move either the main background, the intermediate background, the animation cell or all three, individually or singly, to achieve the necessary effect.

The animation camera work actually begins with plotting the picture during the production planning stage. At this time the production is charted scene by scene, frame by frame. It is carefully timed to match the narration, and then the amount of time to be alloted to each scene or sequence is broken down into number of frames. This is translated to a chart for the cameraman, to be followed in photographing the production. This chart shows exactly where the background, the intermediate background, if any, and the animation cells are to be placed on the platten for every single frame exposure, as well as show the position of the camera with relation to the platten bearing the illustrations. Its the next thing to push-button cinematography.

The paper work that precedes shooting is extensive, and is carefully calculated by the scene planner. Sometimes, the cameraman will deviate from the shooting instructions when he finds for example that he can smooth out an abrupt pan or zoom movement indicated on the chart.

By use of illustrative art, instead of colored pen and ink drawings, the full-detailed art in color gives the presentation wider visual scope because of the greater detail that the artists can work into the illustrations. Thus the same impact is brought to the screen that we find in a good color photograph, a painting, or magazine illustration.

In some instances, actual photographs are used in conjunction with the illustrations—sometimes in full square format, sometimes as cutouts, as in one instance in "Airpower American" where planes are shown winging across a cloud-flecked sky. The planes were photo cutouts mounted on a fixed cell, while the sky and clouds were painted on separate backgrounds and moved during photography to give the illusion of movement to the planes.

So accurate are the calibrations on the positioning guides of the crane that it is possible for the cameraman to go back to the crane at any time to make replacement footage, starting with any cell or point on the background illustration. He can start shooting on the presise cell or charted step in the animation shooting script and produce replacement footage that matches the vacant spot in the production perfectly.

A Model 5 Berndt-Maurer camera, re-designed for specific use on the animation crane, is mounted vertically to rotate on the lens axis. The mounting plate also permits moving the camera "north" or "south," "east" or "west" during the shooting cycle. The film magazines are mounted on what would ordinarily be the back of the camera for easier reloading and to permit the camera to be tilted forward for inspection and threading film.

For illumination, common house lamps are used in special lamp housings and are controlled by Colortran transformers to produce illumination of the correct volume and color temperature. This latter factor is all important in photographing Wolff productions with color film. Commercial Kodachrome is used exclusively. Wolff Studios is reported to be one of the greatest single users of this film stock anywhere.

The studio makes careful color tests on every batch of film used, and in most cases uses one color emulsion (i.e., of the same serial number) for each production to insure color consistency and control. This is highly important in achieving the utmost fidelity of color in the great variation of hues and tints employed in the colorful illustrations used in the "anistration" system.

"Anistration" is an example of the ingenuity and the constant drive for new and better techniques that prevail at the Raphael G. Wolff studio, and which have made the organization one of the leaders in its field. This leadership is evidenced by the many fine Raphael G. Wolff productions which have won awards in recent international film festivals.

"'Anistration' isn't necessarily a method to save money," says Ray Wolff, the studio's head. "That isn't its prime purpose. Its chief advantage is its ability to tell a story quicker and to produce a visual impact that is genuinely impressive—that stays longer in the memory of the viewer."

"Production costs can also be cut," Wolff pointed out, "when we compare our costs to those of producing comparable subjects in straight animation or live action." As an example of time- and money-saving, Wolff cited "Freedom and Airpower" which, if produced in conventional animation, would have required about 18,000 individual cells, and involve about three times the amount of work and time to prepare and photograph. Using the "anistration" system, the production required but 4,500 cells.

"Freedom and Power" and "Airpower American" mark the studio's initial ventures in "anistration." The sponsors of the respective films, General Electric Company, and the U. S. Air Force, are deserving of a measure of credit for their success, Wolff said.

"Both took a chance on this radically new departure in film production and we are happy their confidence has been justified.

"We feel that 'anistration' is the answer to today's problem of informing a public having less and less time in which to absorb new ideas, digest day-to-day news, or simply to be entertained. The same conditions which have brought us the tabloid daily, the digest-type magazine, the pocket-edition novel, and more recently the 'Quick'-type publications are also responsible for the development of 'anistration.' As a technique for industrial, educational, training and public relations films, it is ideally suited to the times."

HIGH-SPEED CINEMATOGRAPHY

(Continued from Page 343)

ture taking frequencies up to about 250 pictures per second. The maintenance of these cameras is said to be high, however.

In the continuous cameras the film is in motion constantly and the shutter action is produced, in American practice, by interrupting the light source, or by using a rotating prism. Contrary to continuous projection practice, where an exposure cycle as long as possible is required, in the continuous cameras the exposure cycle should be as short as possible to ensure film with sharp images for measurements purposes.

In the case of interrupted light source in cameras of the Edgerton type, the flashing gaseous discharge tubes are synchronized so as to lay down a picture every three-quarters of an inch on the film. This camera has a commutator built into it to provide this synchronization, and it is a major premise that the film travel no more during exposure than one-half the resolution of that film. This means that as the exposure time is shortened, the film can be run at greater rates of speed. Of course, the old spark cameras, and interrupted spark cameras, could be utilized at even higher speeds than with the Edgerton lights. The maximum picture taking rate of an Edgerton camera, and with the power supply of the lights used, is 1500 pictures per second. By using multiple power systems for the lights, and reducing picture frame height, high picture taking speeds are possible, even up to 20,000 per second. These could not be projected unless optical handsprings were turned in printing these onto motion picture positives.

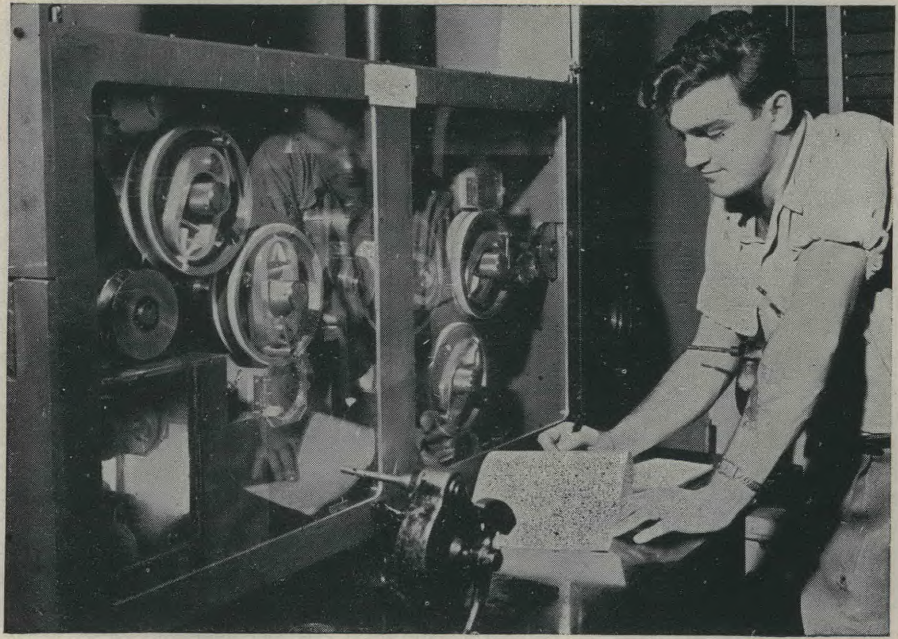
In the rotating prism cameras, an optical flat is designed so that with an optimum thickness and index of refraction, and number of degrees of arc through which the prism rotates, the image is laid down in synchronism with the moving film. Advances, so great, have been made in the design of the rotating prisms that when high-speed pictures are added to normal speed pictures in a print, such quality is now being obtained that there is no longer the noticeable difference that the Signal Corps cameraman noted.

The design of these prisms, and the associated moving parts working in conjunction with the prisms, are quite critical. Tolerance of manufacture is being tightened up all of the time so that there is no bounce or weave of the film or image when the film is moving at speeds up to 200 feet per second. Where it was formerly thought that tolerances in camera manufacture were tight at 1/10,000 of an inch, tolerances of 1/100,000 and 1/1,000,000 of an inch are now being considered on cameras which are being designed. Exposure cycles on the commercially available rotating prism cameras vary between 1/5 and 1/6 of the reciprocal of the picture taking rate.

A blending of the Edgerton system and the rotating prism types has recently taken place. Exposure times of 1½ microseconds each of picture taking rates up to 7,000 per second can be obtained when using a reluctance triggering pickup in the camera, and fiiring the lamps when the optical flats are perpendicular to the film plane.

The picture taking spectrum of one commercially made camera of the 16mm type is 1,000 to 3,200 per second, while that of another type the spectra are as follows: 8mm, 300 to 16,000; 16mm, 150 to 8,000; and 35mm half-frame, 500 to 6,000.

Lighting is always a problem to be considered as far as the cameraman is concerned. The normal procedure in



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photography is to light reasonable flat, and to use spots in various places to bring emphasis to particular portions. Both high-key and low-key lighting are used for dramatic effects. With the increasing use of Technicolor in feature productions, to get the most pleasing color, the saturation of colors is kept reasonably constant.

Contrary to this type of lighting, concentrated spots are used for high picture taking rates. The images of the filaments of the lights themselves are projected on the subject with the use of mirrors and/or condensing lenses. These filament images are so hot that black paper can be set on fire, and hard rubber melted. To overcome these disadvantages, water cells have been placed in the lighting units to absorb the heat without seriously affecting the output. Incandescent lamps are burned at over their rated voltages (the filaments having been turned on at a lower voltage and gradually brought up to temperature) in order to get maximum efficiency. Efficiency, in this case, does not mean long life, but effective light output, regardless of the life of the lamp. In an experiment which costs a thousand dollars or a million dollars, a few dollars worth of lights means nothing. Furthermore, color temperatures may be obtained from these tungsten sources which are suitable for color photography. Four 1,000-watt, 100-volt, lamps with spherical reflectors will illuminate a 3″x3″ field with sufficient intensity to make color pictures at 5,000 per second. The color temperature obtained with these over-volted lamps is suitable for available color emulsions. There is more variation in the day to day processing of subtractive color films than there is by the slight increased color temperature produced by these lights. With these same lights, it is possible to make black and white pictures at 16,000 per second at f/5.6.

Old Sol is another excellent light source for high-speed motion pictures. In the desert regions of the United States, pictures have been made on Super XX negative at 4,000 per second, using a number 25 Wratten filter. With daylight, in Rochester, reversal pictures have been obtained in the summertime at 5,000 per second at f/2.7. Contrary to the Kodak Handbook on Kodachrome photography, where it is stated that the minimum exposure time for Kodachrome should be a fiftieth of a second at f/8, successful exposures have been made at a 1,000 per second in the desert country at f/2.7. True, there is a difference in reciprocity loss at these low exposures, but the redeeming feature is the latitude of the film. This should be even better as far as color is concerned when color negative becomes generally available.

In order to light larger areas, aircraft searchlights and photoflashes, fired in multiple have been used. One ordnance cameraman is successfully lighting a 10′x12′ area by firing a number of photoflash lamps one after the other. The electronic firing circuit is so designed that there is no apparent washout of light between particular firings. One user of high-speed photography wants to (be able to) illuminate an 8′x8′ area to make pictures at 50,000 per second.

The above statements indicate that there is a difference between the normal set lighting and the high-speed phtographic lighting.

An interesting experiment was encountered in Los Angeles. The 750R high-speed photographic lamps were used to photograph living tissue. Approximately twenty of these lamps were focused on the subject, and it was necessary to keep the living tissue bathed in a saline solution to prevent damage. It was learned that with a fewer number of the focusing type lights and with water cells, that tissue of humans can now be photographed, as well as that of animal subjects, with perfect safety for the patient. In the not too far distant future, it is anticipated that one of the greatest medical monographs will appear as a result of these studies.

The studies above have been confined to the 16mm, 8mm, and bastard-frame 35mm cameras. The 16mm camera has been primarily the laboratory workhorse, while the other two have been used largely for ballistic purposes. The 8mm and 16mm frames could not be blown up satisfactorily onto 16mm or 35mm film. The resolution was just not there. The projectionists for the 35mm film have trouble enough trying to frame the half-frame 35mm pictures. They thought they were seeing double on the screen, which they were.

It is of interest to those in the 35mm field that a full-frame 35mm high-speed motion picture camera is in development, and a great future is predicted for that camera. It will utilize the design changes which will produce better pictures than ever before. Its photographic objectives will be of the new f/2.3 series which has recently been announced. The sprocket plane will match the image plane. The camera will have a 500-foot capacity, employing daylight loading spools of standard negative perforations so that both black and white and color negatives can be freely used.

What is going to be the effect of this new camera? In the entertainment field this new medium can produce a whole new series of shorts. What happens when Sam Snead hits the golf ball at 1,000 pictures per second, and not 64 What happens when a can of beer is opened, or gingerale shaken up? What happens when a television tube is hit with a hammer? What happens when mama mixes the cake with her electric mixer? What happens when a firecracker goes off? What happens when the motor boat propeller gets snarled up in the reeds? The field is unlimited as far as suitable entertainment subjects are concerned.

High-speed photography can replace much of the animation which is used in instructional pictures, when action can be slowed down as much as 833 times with the present line of cameras. The mind can comprehend what is occurring on rapidly moving subjects far better when one can see what is happening, rather than try to guess what is happening.

High-speed motion picture photography is in its infancy. To those who are engaged in normal photography and motion picture photography it is important to point out that a whole new set of ground rules exists for high-speed cinematography. With new photographic techniques rapidly developing, each presents its own special problems. These techniques must be learned through experience, and they are easily acquired when approached with an open mind.

AMATEURS WHO BECAME 'PROS'

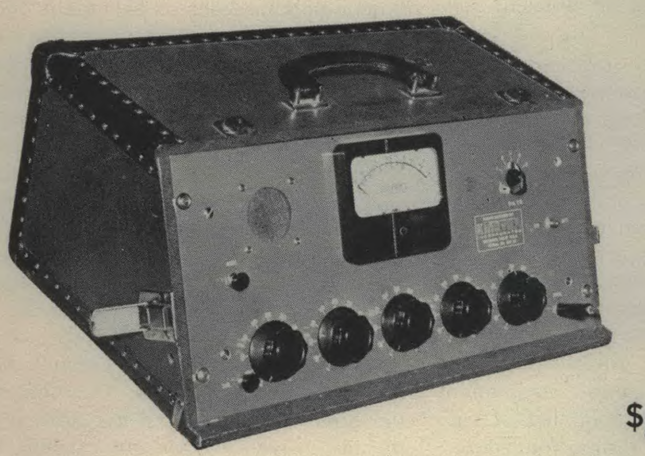
(Continued from Page 349)

Stranger"—but instead of photographing it, he directed it.

Edwin Olsen is perhaps the only professional cameraman in Hollywood to rise from the ranks of amateur movie making hobbyists in recent years and be admitted to the professional cameramen's union. Several years ago, Olsen retired from a successful contracting business to travel, ski and shoot 16mm movies. A skier of note, he wanted to record his skiing trips around the country in color movies. It was during one such trip that Olsen learned about the periodic boating expeditions down the treacherous Colorado River rapids. This suggested a highly interesting 16mm picture in color, and Olsen arranged to accompany the next expedition.

His 16mm Kodachrome documentary of the trip, which ran 1600 feet, won him immediate national renown as a cine photographer. Later, Warner Brothers purchased the film and from it edited a one-reel short subject titled "Facing Your Danger." It won an Academy Award in 1946, thus adding further to Olsen's prestige as a photographer.

By now, Olsen was already established as a professional cameraman. James Fitzpatrick, maker of the famous



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"MGM Traveltalks," had also seen Olsen's Colorado River film along with his other works, and had engaged him as cameraman. A year later he became associated with Dudley Pictures Corp., makers of "This Land Of Ours" and "This World Of Ours" documentaries, which are currently seen in theatres and on television.

Olsen is now chief cinematographer for Dudley, has traveled to nearly every nation on the globe with his camera in search of material for Dudley's films.

Many movie amateurs believe that only 16mm filmers get a chance at professional cinematography. However, Ted Phillips proved the exception. Years ago, Ted's 8mm movies were consistent winners in Chicago Movie Club contests. Burton Holmes, the travel lecturer, heard about his films and one day summoned Ted to his home to show his pictures. Ted's genius for pictorial composition and color quality greatly impressed Holmes who hired him as his chief cameraman.

Ted switched to a Cine-Special, and for years, together with his wife Dorothy, he traveled all over north, central and south America filming material in 16mm color for Burton Holmes' lecture films. Later assignments took Phillips to Alaska, Hawaii, Australia, New Zealand, West Indies, and Mexico.

During his amateur movie making days, Phillips developed a knack for "editing as you shoot"—a technique which proved ideal for lecture film making. The subjects he photographed and edited for Holmes are regarded the best in Holmes' series.

Some of the better amateur movie talent in the country is to be found in Salt Lake City, Utah. Here, Richard V. Thiriot had been an amateur of note for many years when he became associated with the local Eastman Kodak agency. This afforded him opportunity to meet and talk with many people interested in home movies. One of these was the athletic coach of the local university, who one day came to Thiriot for help, following a badly photographed movie record of a college athletic event.

As Thiriot was explaining the cause of the trouble, the coach interrupted with an offer for him to come out to the college and shoot the school's athletic events in 16mm. Thiriot accepted and thus began a long association with the college as motion picture photographer. Other filming assignments came to him as a result of his college work, and when KSL opened its TV station and looked about for a competent man to take charge of its film department, the station sent for Dick Thiriot.

Thiriot owns extensive motion picture equipment, including a Bell & Howell 70-DH camera having an electric motor and 400- and 1200-foot film magazines. The television station committment is such that Thiriot can continue shooting the annual football games for the college, and produce TV commercials for the station's many sponsors.

When Thiriot took up the hobby of home movies about fifteen years ago, television had scarcely been heard of. But today, it has given him his first real opportunity as a professional cinematographer.

D. Lisle Conway is another former movie amateur now in television film production. During the 30's, Conway was one of the most prominent amateurs in Syracuse, N. Y. His films were regularly winners in club contests.

Later, Conway was elected to the faculty of Syracuse University, where for five years he served as technical director of the University's radio department. In spare hours, off campus, he carried on with his movie making—shooting free-lance newsreel footage and commercial motion pictures. Meantime, he kept alert for any opportunity to enter the professional field, and when WHEN-TV needed a man for its mo-

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tion picture department, Conway's fame as a top-notch 16mm cameraman led him to the job. Today, he is director of the motion picture and special effects department of the station—a post which is growing in importance every day with the increasing use of films in television.

Opportunities in the professional field of motion pictures are not limited to men alone. In the industrial film world, the name of Mildred Green is well known. Miss Green once was an ambitious amateur movie maker. When she had mastered her camera, she looked about for serious subjects to film. She made her first commercial film on speculation. It so pleased the prospective sponsor she was engaged to do a series. Today, she is still active in her field. A conservative and independent operator, she boasts a long list of successful industrial and promotional films. Not given much to talking about her success, intimates credit her phenomenal rise to an uncanny ability to visualize her picture in advance, cut corners in production, and turn out a skillful editing job.

One of the big success stories in the world of 16mm movie making is that of Edgar M. Queeny, chairman of the board of Monsanto Chemical Company. Queeny, some years ago, took up the hobby of amateur movies, got the bug so bad he soon owned the best camera equipment money could buy and was roaming the world in quest of unusual color movies.

He made a trip to Africa to film natives there, came back with remarkable Kodachrome footage and synchronized sound recordings which became "Latuko"—one of the most successful documentary films shown in the nation's theatres last year.

Perhaps Mr. Queeny's experience is outside the realm of the purely ambitious amateur eager to become a "pro." Queeny made movies for the fun of it. But when he shot something extraordinary, such as the African footage, he took advantage of its professional possibilities.

This is but a cross-section of experiences of expert amateur movie makers for whom opportunities have opened up in the professional field. Success has touched both the humble 8mm movie maker and wealthy hobbyist alike. In each instance, it was the quality of the photography that led to greener fields for the cine cameraists. In each case, the filmer had mastered his camera and the techniques of exposure, focus, composition, and even more important—the knack of *shooting for continuity without a script*. In this it may be said that the serious amateur receives superior training.

Since the introduction of 16mm motion pictures as a medium for the amateur photographer, back in 1925, 16mm has come a long way. Many of the important documentary, industrial and television motion pictures are produced with 16mm film. Even more are released in 16mm. Needless to say, these fields of motion picture production will continue to grow, and it is not unlikely that still other 16mm cine cameraists with ability, imagination and a fresh viewpoint will find opportunity to expand their talents there.

THE VISTASCOPE

(Continued from Page 339)

the question is—why do we not use more special effects shots. Part of the answer is that only the special effects man can completely visualize what will be done. It is difficult for a director to plan live action without seeing it in the complete setting. Most special effects shots are made by compositing two or more motion picture films which cannot be viewed simultaneously and seen in composite such as can be done with the matte, as for example Figure VII.

It is the thought of the writer that the Vistascope will bring about a greater use of composite photography and as the art develops, other possibilities and advantages will become apparent.

Some of the advantages of the Vistascope are: the dailies are returned the next day or along with production dailies, they are not tied up in the special effects department for weeks and/or months; there is no increase in grain size during zooming, panning and tilting such as exists when motion picture scenes are blown up for this purpose; the matte lines are sharp and definite; still pictures can be taken from books, prints and libraries of photographs; the mattes can be made from paintings and drawings. It is possible to touch up or change the matte to meet specific requirements. Still pictures are less expensive, more plentiful and easier to shoot than the motion picture film normally used for composite photography. Still pictures can be shot at much lower light levels, in fact generally with the normal ambient room light.

The resolution of the Vistascope photography, especially in depth, can be better than straight photography. If the still has high-resolution and if the plane of the aerial image is in the plane of the matte, they will both be in sharp focus—an approach toward universal focus. The light requirement including rigging is reduced to lighting only the live action.

Although there is a great advantage in the use of the Vistascope in black and white, its greatest advantage and no doubt its greatest use will be in the field of color photography. Special effects work in color has become very complex and this new tool may prove to be one of the simplifying factors in the ever-increasing complexity of motion picture making.

BACKGROUND PROJECTION

(Continued from Page 342)

both the projector and camera. One reason the new Mitchell background projectors are finding favor with the studios is because they have scientifically silenced movements and therefore can be used without a cumbersome blimp.

Film registration is more critical in process photography than in ordinary filming because there can be no unsynchronized movement between the foreground objects and the background scene. A slight amount of image movement is not objectionable if there is no other element in the scene to compare it with. But if the background should show a slight weave while the foreground is rock-steady, the error is readily apparent. For this reason all background projectors are equipped with registration pins and most background plates are photographed in cameras having pins. Background projectors also have interchangeable movements so that plates that were photographed with pins either above or below the frame can be registered at the same sprocket holes in projection.

Background plates are usually photographed on a slow, fine-grain panchromatic stock. The negative and prints are developed with the contrast characteristics of the studio's own process equipment in mind. Some process specialists require three prints to be made at different printer-lights thus providing a range of plates from which the best is selected for projection. One print is made at a brightness level predetermined as normal, while two more are made to bracket this choice. Thus a last-minute adjustment can be made on the set to balance the background density with the foreground lighting by merely changing prints in the projector.

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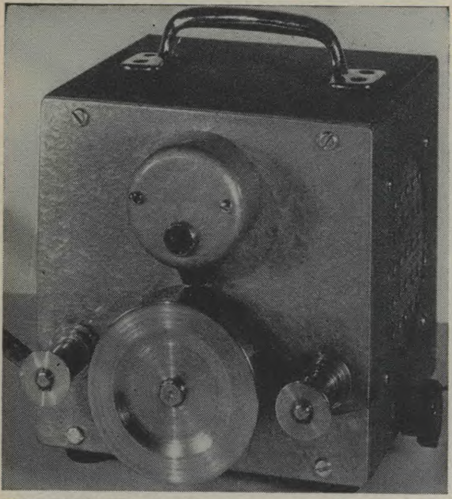

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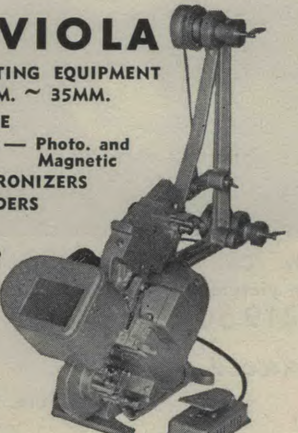

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The background negatives are printed on regular fine-grain release stock having standard Bell & Howell (negative) perforations. A step printer is used to preserve the pilot-pin registration of the negative in the print.

Numerous accessories have been designed for use in working with background projectors. In use at the present time are intercom units between projector and camera; cold-water filters to reduce the fahrenheit temperature of the light before it reaches the film; and special aperture plates that allow the side of the film, including the sprocket holes, to be projected for quick tests. This last device can settle immediately any dispute as to whether this is a weave in the plate or the projector.

Lighting a set that includes a process screen requires more care than for an ordinary scene. Too much light must not be allowed to spill over onto the screen, for it lightens and degrades the projected image. And a light that hits the screen directly washes out part of the background altogether. The actors, set, and props in the foreground must be arranged and lit to match the lighting and contrast in the background as closely as possible. This might seem like a case of the tail wagging the dog, but the director and cameraman usually are given a wide selection of plates to choose from so that they are not hampered by having to match scenes to unsuitable background material. Where there is greenery on both the plate and foreground, the cameraman must balance his screen and foreground lighting so that a difference between the real and projected greenery will not reveal to the audience that a special effect is being used. This balancing requires the cameraman to know beforehand exactly how any shade of color will reproduce on black and white film.

Another difficulty, but one that is easily overcome with experience, is that the screen always photographs brighter than it appears to the eye. It often photographs brighter than an exposure meter reading will indicate. How can this be possible? The explanation is comparatively simple. The image on the screen is flickering 24 times a second because of the shutter blade in the projector. There is light on the screen only 50% of the time; yet the light, because the flashes are synchronized with the camera, is almost 100% utilized in exposing the negative. The set lighting, on the other hand, supplies constant illumination but is acting on the negative only when the camera shutter is open. Therefore, the light on the screen that we see is twice as effective photographically as the illuminated foreground.

The screen illumination is also more effective because it has been produced by a blue-white carbon arc lamp while the set is usually lit with incandescent lamps or a combination of arcs and inkies. The higher rating of pan film with a bluish light must be considered when balancing the screen and set. Of course, the "old timers" seldom bother themselves with these facts any more because they automatically see any process screen in terms of its brightness in the final print.

Perhaps the most general classifications for process shots are "stationary" and "moving." A stationary shot will have the screen outside an office window, or behind a fence in a rural scene. Or it could be behind a fishing pier. In each of these set-ups, the screen continues the view that the foreground set leads us to expect: the busy street outside the office, the rolling hills beyond the fence, or the ships lying at anchor near the pier. A moving process shot will use the BG screen to show scenery behind a traveling automobile, speedboat, or airplane, etc. Dialogue scenes would be almost impossible to film satisfactorily in a moving vehicle, but they are no difficulty to the director and cast when a screen can give the effect of movement.

Occasionally there is special action on the screen that the actors must play to in harmony. Forest fire scenes are often shot in process to protect the cast from flames and to reduce the amount of actual burning that must be done. Plates are made of trees burning and these are projected behind the actors. Smoke is pumped onto the stage and small firebrands are dropped from above to complete the illusion.

Makers of war pictures have utilized government combat footage for some of their process plates to strengthen the feeling of reality. And several war pictures have included excellent shots of anti-aircraft guns destroying enemy planes by first filming model planes that were made to explode in mid-air. In one instance an anti-aircraft gunner was placed before a screen on which planes were projected. The gunner aimed his weapon at the screen, fired blanks, and his target exploded in mid-air.

Color brings a few additional problems to process photography. The first is the high level of illumination required. Projectors that are primarily made for black and white process work must be used for just small or medium-sized screens if color is being shot in order to concentrate the light. If a large BG picture is desired, several projectors may be run together with an identical plate in each one. Triple-head projectors have been constructed by Mitchell for this purpose, with one machine pointed straight at the screen and the other two on either side of it pointed towards mirrors which reflect their light to the screen. The mirrors make exact registering of the three images a simple adjustment. The new high-speed Technicolor film, which can be exposed at an illumination level of 150 foot-candles, should stimulate the use of large-screen process in color, as also will latensification of the negatives of two-color systems.

Matching color quality of the process screen and the foreground subjects is important. Errors that would be tolerated in regular color shots are unallowable when shooting process, for laboratory correction will affect both screen and foreground images if attempts are made to correct color error in either one.

One of the cleverest uses of Technicolor process photography was to be seen in a Danny Kaye film in which Kaye played a dual role. He talked with his "twin" and freely crossed before him. The twin image was projected on a process screen exactly life size, while Kaye simply acted as though he were playing with a real person instead of the projected image on the screen.

Where process shots call for no motion in the background, the background scene usually is projected from a slide projector situated at the rear of the BG screen. Slide projectors offer the advantages of being easier to operate, present no problem of light flicker that must be synchronized with the camera, produce a brighter light with the same size arc, and do not require the use of film which has to be re-wound before retakes can be made.

Standards for process photography vary with each studio, but typical procedures have been outlined above. In recent years, producers of industrial and training films in 16mm have employed process with marked success. And in television, process shots are regularly used in many shows. In the newer field of three-dimension cinematography, the use of process has yet to be tried; but it goes without saying that process will be successfully adopted to this new type motion picture whenever producers of stereofilms are ready for it.

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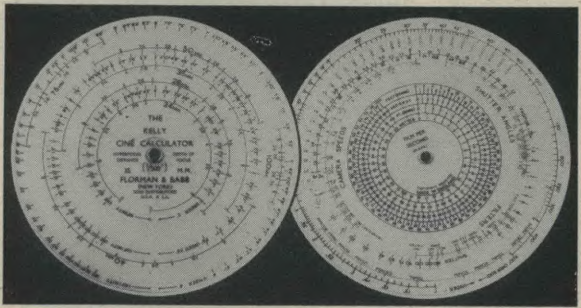

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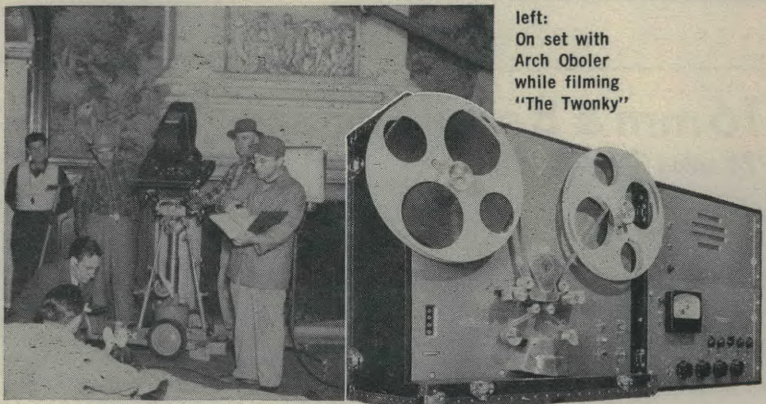

left:
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Current Assignments of A.S.C. Members

Major film productions on which members of the American Society of Cinematographers were engaged as directors of photography during the past month.

Allied Artists

- Ernest Miller, "Battle Zone," with John Hodiak, Linda Christian, Stephen McNally, Philip Ahn. Lesley Selander, director.
- William Sickner, "Down Periscope," (Lindsley Parsons Prod.) with Mark Stevens, Bill Williams, Dorothy Malone. Lew Landers, director.
- Harry Neumann, "Kansas Pacific," (Cinecolor) with Sterling Hayden, Eve Miller, Barton MacLane. Ray Nazarro, director.

Columbia

- Hal Mohr, "The Member Of The Wedding," (The Kramer Co.) with Ethel Waters, Julie Harris, Brandon de Wilde. Fred Zinneman, director.
- Charles Lang, "Salome — The Dance of The Seven Veils," (Beckworth Prod.) (Technicolor), with Rita Hayworth, Stewart Granger, Charles Laughton. William Dieterle, director.
- Henry Freulich, "Ambush At Tomahawk Gap," with John Derek, John Hodiak. Fred F. Sears, director.

Metro-Goldwyn-Mayer

- William Mellor, "The Naked Spur," (Technicolor) with James Stewart, Robert Ryan and Janet Leigh. Anthony Mann, director
- Charles Rosher, "The Story Of Three Loves," (Technicolor) with Kirk Douglas, Pier Angeli. Gottfried Reinhardt, director.
- Joseph Ruttenberg, "Small Town Girl," (Technicolor) with Jane Powell, Farley Granger, Ann Miller. Leslie Kardos, director.
- Ray June, "Sombrero," (Technicolor) with Pier Angeli, Ricardo Montalban, Vittorio Gassman, Cyd Charisse. Norman Foster, director.
- Robert Planck, "My Mother and Mr. McChesney," (Technicolor) with Greer Garson, Walter Pidgeon. Jean Negulesco, director.
- Paul C. Vogel, "The Girl Who Had Everything," with Elizabeth Taylor, Fernando Lamas. Richard Thorpe, director.
- Harold Lipstein, "A Steak For Connie," with Van Johnson, Janet Leigh, Louis Calhern. Edward Buzzell, director.
- Victor Milner, "Jeopardy," with Barbara Stanwyck, Barry Sullivan, Ralph Meeker and Paul Fierro. John Sturges, director.
- John Alton, "Battle Circus," with Humphrey Bogart, June Allyson, Keenan Wynn, Patricia Tiernan. Richard Brooks, director.

Monogram

- Ernest Miller, "Stranglehold," with Leo Gorcey, Huntz Hall, Marjorie Reynolds. William Beaudine, director.

Paramount

- Ernest Laszlo, "Scared Stiff," (Hal Wallis Prod.) with Dean Martin and Jerry Lewis. George Marshall, director.
- Lionel Lindon, "The Stars Are Singing," (Technicolor) with Anna Maria Alberghetti, Rosemary Clooney and Lauritz Melchoir. Norman Taurog, director.
- Frank Planer, "Roman Holiday," (Shooting in Rome, Italy), with Gregory Peck, Audrey Hepburn, and Eddie Albert. William Wyler, producer-director.
- Ray Rennahan, "Pony Express," (Technicolor) with Charlton Heston, Rhonda Fleming, Jan Sterling, Forrest Tucker. Jerry Hopper, director.

AMERICAN SOCIETY OF CINEMATOGRAPHERS

FOUNDED January 8, 1919, The American Society of Cinematographers is composed of the leading directors of photography in the Hollywood motion picture studios. Its membership also includes non-resident cinematographers and cinematographers in foreign lands. Membership is by invitation only.

•

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- William Snyder, "Blackbeard The Pirate," (Edmund Grainger Prod.) with Linda Darnell, Robert Newton. Raoul Walsh, director.
- Harry Stradling, "The Murder," with Robert Mitchum, Jean Simmons, Mona Freeman, Herbert Marshall. Otto Preminger, producer-director.
- Nick Musuraca, "The Difference," (Filmakers), with Edmond O'Brien, Frank Lovejoy, Virginia Huston. Ida Lupino, director.
- Harry Wild, "Break-Up," with Jean Simmons, Victor Mature, Jane Darwell. Roy Rowland, director.
- William Daniels, "Never Wave At A WAC," (Independent Artists) with Rosalind Russell, Marie Wilson, Paul Douglas. Norman Z. McLeod, director.

20th Century-Fox

- Arthur Arling, "The Farmer Takes A Wife," (Technicolor) with Betty Grable, Dale

Robertson, Thelma Ritter. Henry Levin, director.

- JOSEPH MACDONALD, "Niagara," (Technicolor) with Joseph Cotton, Jean Peters, Marilyn Monroe. Henry Hathaway, director.
- EDWARD CRONJAGER, "Powder River," with Rory Calhoun," Corinne Calvet, Cameron Mitchell. Louis King, director.
- LUCIEN BALLARD, "The Number," with Richard Widmark, Shelley Winters. Joseph M. Newman, director.
- JOSEPH LASHELLE, "My Cousin Rachel," with Olivia de Haviland, Richard Burton, Ronald Squires. Henry Koster, director.
- MILTON KRASNER, "Taxi," with Dan Dailey, Constance Smith. Gregory Ratoff, director.
- CHARLES G. CLARKE, "Sixty Saddles For Gobi," with Richard Widmark, Don Taylor, Murvyn Vye. Robert Wise, director.

Universal-International

- CHARLES BOYLE, "Roughshod," (Technicolor), with Audie Murphy, Susan Cabot, Paul Kelly. Nathan Juran, director.
- IRVING GLASSBERG, "Mississippi Gambler," with Tyrone Power, Piper Laurie, Julia Adams, John McIntire. Rudolph Mate, director.
- RUSSELL METTY, "Seminole," (Technicolor) with Rock Hudson, Barbara Hale, Anthony Quinn, Richard Carlson. Budd Boetticher, director.
- JOHN SEITZ, "Desert Legion," (Technicolor) with Alan Ladd, Arlene Dahl, Richard Conte, Akim Tamiroff. Joseph Pevney, director.
- MAURY GERTSMAN, "Lone Hand," (Technicolor) with Joel McCrea, Barbara Hale, Alex Nicol, Charles Drake. George Sherman, director.

Warner Brothers

- ROBERT BURKS, "The Desert Song," (Technicolor) with Kathryn Grayson, Gordon MacRae, Raymond Massey. Bruce Humberstone, director.
- TED MCCORD, "Stop, You're Killing Me!" (Warner-Color) with Broderick Crawford, Claire Trevor. Roy Del Ruth, director.
- EDWIN DUPAR, "Back To Broadway," (Warner-Color) with Virginia Mayo, Steve Cochran, Gene Nelson, Patrice Wymore. Gordon Douglas, director.

Independent

- RUSSELL HARLAN, "Ruby Gentry," (Bernhard-Vidor Prod.—20th-Fox.) with Jennifer Jones, Charlton Heston. King Vidor, director.
- JOSEPH BIROC, "Bwana Devil," (Arch Oboler Prods.) (Ansco Color) with Robert Stack, Barbara Britton, Nigel Bruce. Arch Oboler, director.
- JACK RUSSELL, "The Velvet Cage," (Wisberg-Pollexfen Prods.) with Helen Walker, Rose Elliott, Susan Morrow. E. A. DuPont, director.
- GILBERT WARRENTON, "Lost Women of Zarpa," (Howco Prods.) with Jackie Coogan, Chris-Pin Martin, Allan Nixon. Ron Ormond, director.
- JACK RUSSELL, "The Monster From Beneath The Sea," (Mutual Prods.) with Cecil Kellaway and Ken Tobey. Eugene Lourie, director.

NOTE: Names of A.S.C. Directors of Photography who were engaged in the photography of films for television last month will be found in the "Television Production column" on page 364.

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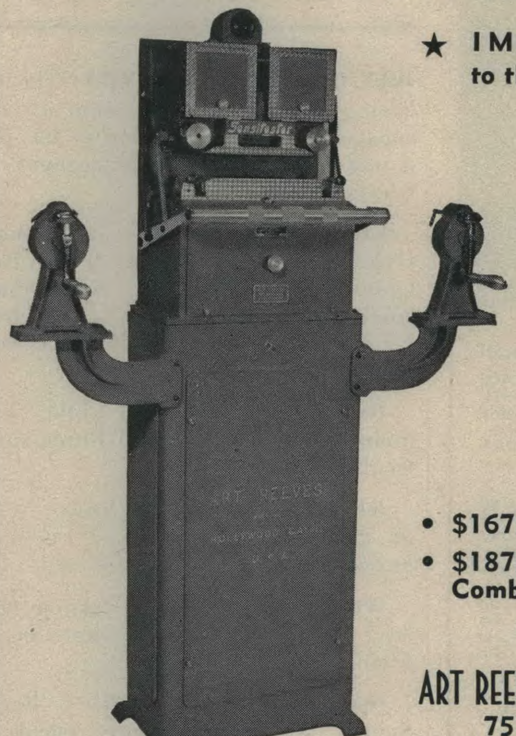

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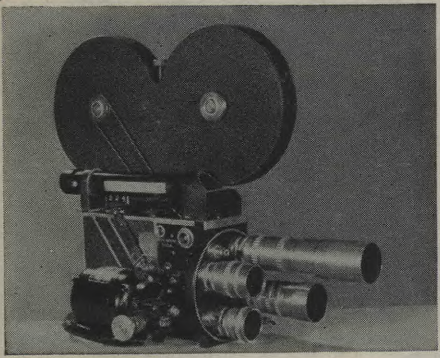

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Television Film Production

By LEIGH ALLEN

JULY PRODUCTION ACTIVITY: The following cinematographers were actively engaged in Hollywood during the past month directing the photography of television films:

Lucien Andriot, A.S.C., "Rebound" series of half-hour adult dramas for Bing Crosby Enterprises, at RKO-Pathe studios. Also, two series of half-hour TV films for Lancer Productions, same studio.

Joseph Biroc, A.S.C., "The Child," half-hour pilot film for Anchor Productions, Goldwyn Studio.

John Boyle, A.S.C., "Big Town" series of 26 half-hour dramas at General-Service Studios, for Gross-Krasne, Inc.

William Bradford, A.S.C., "Annie Oakley" series of half-hour westerns for Flying A Productions.

Norbert Brodine, A.S.C., "Racket Squad" series of half-hour telepix at Hal Roach Studios, for Showcase Productions.

Ellis Carter, A.S.C., "Mr. and Mrs. North" series of half-hour situation comedies for Federal TV Corp., Goldwyn Studios.

Dan B. Clark, A.S.C., the "Unexpected" series of half-hour telepix for Ziv Productions.

Leonard Clairmont, "Man Of Tomorrow," series of 15-minute telepix for Hour Glass Productions.

Robert DeGrasse, A.S.C., "Amos 'N Andy" comedy series for CBS-TV, at Hal Roach Studios.

George Diskant, A.S.C., series of 26 half-hour telepix entitled "Affairs Of China Smith," for Tableau-China Smith Prods., Motion Picture Center.

Curt Fetters, "Cisco Kid" series of half-hour westerns for Ziv Productions.

Elly Fredericks, series of half-hour adult dramas at Eagle Lion Studios, for Revue Productions.

Henry Freulich, A.S.C., series of half-hour dramas at Motion Picture Center, for Edward Lewis Productions.

Karl Freund, A.S.C., "Our Miss Brooks" series of half-hour comedies, for Desilu Productions, General Service Studios.

Fred Gately, A.S.C., series of 15-minute telepix with Art Linkletter, for John Guedel Productions.

Fred Gately, A.S.C., series of half-hour comedy telepix, "It's The Bickersons," for Jan Productions, Inc., General Service Studios.

Fred Jackman, Jr., A.S.C., series of half-hour dramas for Fred Jackman Jr. Productions, at General Service Studios.

Benjamin Kline, A.S.C., "Fireside Theatre" series at Eagle Lion Studios, for Frank Wisbar Productions.

John Martin, "Wild Bill Hickok" series of half-hour westerns at Sunset Studios, for William Broidy Productions.

Joe Novak, series of 15-minute westerns at Goldwyn Studios, for Roy Rogers Productions.

Kenneth Peach, A.S.C., "Family Theatre" series of half-hour dramas for Jerry Fairbanks Productions, Fairbanks Studios.

Robert Pittack, A.S.C., "Lone Ranger" series of half-hour westerns at General Service Studios, for Jack Chertok Productions.

William Sickner, A.S.C., series of 13 "File of Jeffrey Jones" half-hour mystery telepix at KTTV Studios for Lindsley Parsons Prods.

Mack Stengler, A.S.C., "Beulah" series of half-hour comedies for Roland Reed Productions, at Hal Roach Studios.

Alan Stensvold, "Smilin' Ed's Gang," half-hour juvenile adventure pictures for Frank Ferrin Productions.

Walter Strenge, A.S.C., "Mystery Theatre" series, also the "My Little Margie" series of half-hour pictures at Hal Roach Studios for Roland Reed Productions.

Stuart Thompson, A.S.C., "Cavalcade Of America" series of half-hour dramas at Eagle Lion Studios for Screen Televideo Productions.

Phil Tannura, A.S.C., "The Burns And Allen Show," series of half-hour comedies at General Service Studios, for McCadden Corp.

James Van Trees, A.S.C., "Groucho Marx Show," half-hour comedy series at NBC Studio, for Filmcraft Productions.

Gilbert Warrenton, A.S.C., group of four 30-minute "Medal of Honor" telepix for W. R. Frank Prods., General Service Studios.

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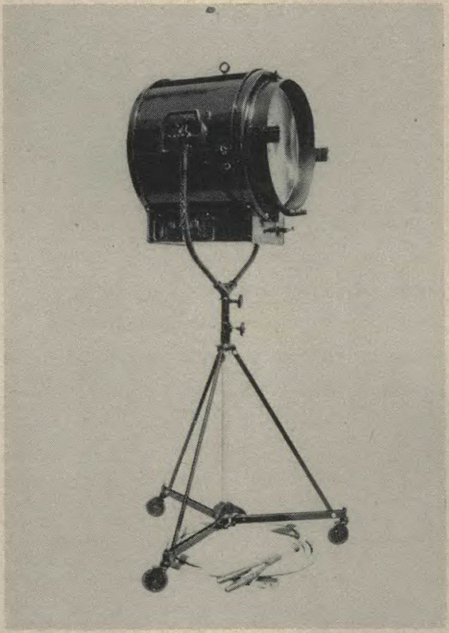
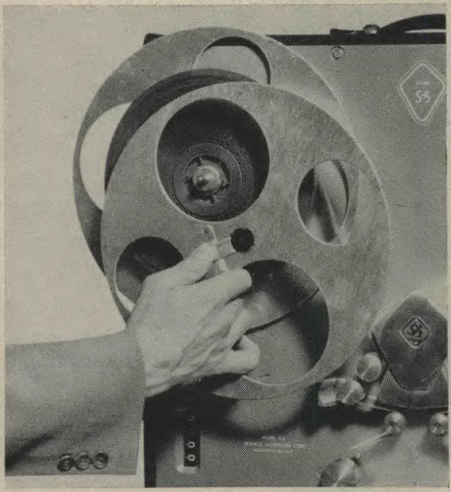
WHAT'S NEW

in equipment, accessories, service

10,000-watt Inkie — Mole-Richardson Company, 937 No. Sycamore Ave., Hollywood 38, Calif., announces "The Tener" — new Type-416, 10,000-watt studio lamp which features a special 20" Fresnel lens, a completely adjustable Alzak aluminum mirror, and dual (front or back) focusing controls. Light source is a 10,000-watt G96 Mogul Bipost lamp. Twenty-five feet of loom-covered cable is furnished with stage plug. Finished in black enamel, lamp head weighs 117 lbs.; cable 16 lbs.; and the pedestal 37 lbs. The usual M-R accessories (barn door, diffuser frame, and shutter) are available for this new unit.

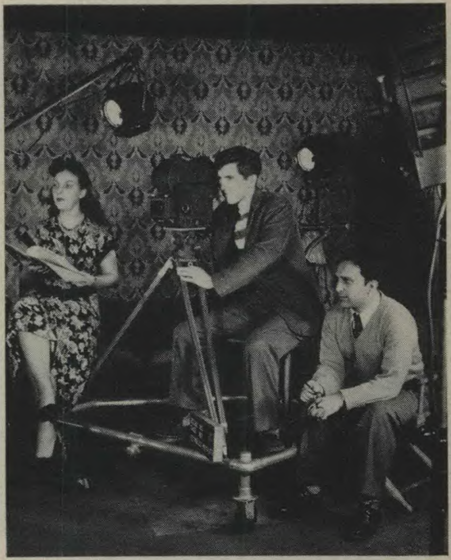




Detachable-Flange Reel—Stancil-Hoffman Corp., 1016 N. Highland Ave., Hollywood 38, Calif., offers an improved reel for magnetic tape and film. It features a quick removable flange, which allows the raw stock to slip easily over the reel hub, eliminating need for winding tape or film on the reel.

Capacity is 1200 feet of 16, 17½ or 35mm. film. Price is $12.50 each for 16 and 17½mm.; $15.00 for 35mm.

New Hollywood Film Lab—Thomas Emmett, veteran laboratory man and Ande Vail, film producer announce the opening of their new film laboratory — Emmett-Vail Enterprises, Inc.—at 6926 Melrose Ave., Hollywood 38, Calif. Lab is equipped to process 16mm and 8mm B&W prints, Kodachrome duplicates, make reductions from 35mm to 16mm for TV, and do 16mm to 8mm reversal processing.



Lightweight Camera Dolly—Cinema Products, Louisville, Ky., announces a new, lightweight portable camera dolly for use with motion picture or television cameras. It provides two adjustable seats for camera operator and assistant, and has rubber-tired ball-bearing casters affording smooth movement over stage floor. Made in sections of lightweight tubular metal, dolly may be knocked-down or reassembled in a matter of minutes, and is easily carried in an automobile trunk along with camera and other equipment.

Trade Notes—Charles Ross, who for the past 30 years conducted the business of sale and rental of motion picture and TV lighting and grip equipment under business name of Charles Ross, Inc., died last month in New York. END

Stars must be glamorous—always

• Everybody loves the star. She's the darling of the box office . . . the apple of the producer's eye. Her glamour is everybody's good fortune—an inspiration to writers, directors, cameramen—a responsibility to technicians.

In the studio, technicians frequently collaborate with representatives of the Eastman Technical Service for Motion Picture Film . . . consider the best type of film, black-and-white or color, to use . . . to set control systems for the laboratory that assure standards of high image quality. Help is also made available for exchanges, exhibitors to make sure that prints and theater equipment are right for finest projection—that every foot of film gets the star the best possible showing.

To maintain this service, the Eastman Kodak Company has branches at strategic centers . . . invites inquiry on all phases of film use from all members of the industry. Address:

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With 1-inch f/1.9 lens only, $365.50. For further information, see your Bell & Howell dealer. And be sure to ask about the new Filmosound 202 recording projector.

And here's a suggestion! Why not have a demonstration of the Filmosound 202 using your own sound film. In this way, you can prove to yourself the worlds of exciting possibilities that exist in making your own sound movies.

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FREE SOUNDSTRIPE* of your first 100 feet of single-perforated film — that's what you get when you buy a new 70-DL . . . or have your present model 70 adapted. This is a special limited-time offer made by Bell & Howell to acquaint you with this wonderful new way to make sound movies.

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If you already own a Bell & Howell 70 camera, you can have it adapted to take single-perforated film as well as regular double-perforated film. This brings your camera right up-to-the-minute in usefulness. This is a factory conversion which you can arrange for through your Bell & Howell dealer for just $15.95. Same "free" SOUNDSTRIPE offer applies.

*SOUNDSTRIPE—the magnetic iron oxide stripe applied to single-perforated 16mm movie film for magnetic sound recording.

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